ROYAL ACADEMY OF MEDICINE IN IRELAND

IRISH JOURNAL OF MEDICAL SCIENCE

62nd Irish Cardiac Society
Annual Scientific Meeting 2011
6th–8th October

~

Slieve Donard Hotel
Downs Rd, Newcastle, Co. Down
Northern Ireland

~

Irish Journal of Medical Science
Volume 180 Supplement 11
DOI 10.1007/s11845-011-752-y

Springer

Disclosure Statement

There is no conflict of interest as the pharmaceutical companies do not have contact with the authors. All submissions by authors are free and they may submit more than one entry. The support for the meeting comes in terms of lease of venue; hotel expenses; meeting running costs and speaker expenses.

The ICS 2011 meeting is funded with the support of the following commercial bodies:

Abbott Healthcare Products Ltd
Actelion Pharmaceuticals Ltd
A Menarini Pharmaceuticals (Ireland) Ltd
A Menarini Pharmaceuticals (NI) Ltd
AstraZeneca Pharmaceuticals (Ireland) Ltd
Bayer Limited
Biotronik UK Ltd
Boehringer Ingelheim Ireland Ltd
Boston Scientific Ltd
Cardiac Services (Ireland) Ltd
CR Bard
Daiichi Sankyo Ireland Ltd
Fannin Ltd
GE Healthcare
G-Pace
M^3 Medical
Maquet Cardiac Assist
McKesson Enterprise Medical Imaging Group
Medtronic Ireland
Merck Sharpe Dohme
3M Ireland Ltd
Merit Medical
Novartis Ireland Ltd
Novo Nordisk
PEI
Pfizer Healthcare Ireland Ltd
Reid Healthcare Ltd
Roche Diagnostics Ireland
Recordati Ireland Limited
Sanofi Aventis
Servier Laboratories Ltd
Siemens Ltd
SMC/Brennan Medical
St. Jude's Medical
Takeda
Verum Diagnostica GmbH
Vifor Pharma Ltd

Programme

Thursday 6th October

Irish Cardiac Society Scientific Sessions

Thursday 6th October

Session 1	*Electrophysiology* Chairs: Dr David Keane
18.30–21.00	Case Presentations
Session 2	*Interventional Cardiology* Chairs: Dr Colm Hanratty, Prof David Foley
18.30–21.00	Case Presentations
Session 3	*Peripheral Intervention* Chair: Prof Declan Sugrue
18.30–18.35	Opening Remarks
18.34–18.50	Vascular Access Complications: Endovascular Solution Dr. Brendan Doyle Mater Private Hospital, Dublin
18.55–19.10	Subclavian/Brachiocephalic Intervention Dr. Tom Kiernan Cork University Hospital, Cork
19.15–19.30	Renal Artery Intervention Dr. Andrew Maree Waterford Regional Hospital
19.35–19.50	Venous Disease Dr. Ronan Margey Massachusetts General Hospital, Boston, USA
	Panel Discussion
20.00	Close

Friday 7th October

08.30–08.45	Registration
08.45–09.00	Welcome from Dr Carol Wilson, President
Session 4	*Hot Topics* Chair: Dr Carol Wilson
09.00–09.30	"Device regulation–the clinician's perspective" Dr Peter Wilmshurst Royal Shrewsbury Hospital

09:30–10.30 Oral Presentations

1. Our Experience with Subcutaneous Implantable Defibrillators
Buckley U, Joyce E, Mustafa G, Keaney J, Galvin J, Keelan T, Chuktai Z, Walsh K
Miseraecordiae Hospital, Eccles Street, Dublin and the Mater Private Hospital, Eccles Street, Dublin

2. Characteristics and Outcomes of Patients Undergoing Catheter Ablation of Atrial Fibrillation at a Single Centre
Buckley U, Anwar A, Keaney J, Mustafa G, Joyce E, McCann C, Keelan T, Galvin J
The Mater Private Hospital, Eccles Street, Dublin

3. Renal Denervation for Resistant Hypertension
Mylotte D, Garot P, Unterseeh T, Louvard Y, Benamer H, Morice MC
Institut Cardiovasculaire Paris Sud, Paris, France

4. Outcome of Cardiac Surgery in Patients Initially Refused Surgery
Soo A, Nzewi O, Graham A
Department of Cardiac Surgery, Royal Victoria Hospital, Grosvenor Rd, Belfast

5. A Case Series Documenting the First Irish Experience Utilising Optical Coherence Tomography in Coronary Intervention
Phelan D, O'Sullivan B, Canniffe C, Matiullah S, Nash P, McNeill B, Crowley J, Daly K, Sharif F
Galway University Hospital, Galway

6. The Role of Cardiac MRI Perfusion in the investigation of coronary Ischaemia
Morgan RB, Waterhouse DF, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R
Dept of Cardiology, Beaumont Hospital Dublin,
Cardiac MRI Unit Blackrock Clinic, Blackrock, Dublin

10.30–11.00 Poster Presentation
Coffee/Exhibition

7. Systemic Embolic Events Other than Stroke or TIA from Paradoxical Embolization via Patent Foramen Ovale
Margey R, Arzamendi D, Hynes B, Elmariah S, Renfigo-Moreno P, Schainfeld R, Jaff MR, Inglessis I, Palacios IP
Interventional Cardiology and Vascular Medicine, Division of Cardiology, Massachusetts General Hospital and Harvard Medical School, Boston, MA

8. Contemporary Outcomes of Aortic Valve Replacement in Octogenarians
Mustafa G, Anwer A, Buckley U, Bajrangee A, Galvin J, Keelan E, Wood AE, McCarthy J, Redmond M, Hurley J, Noelke L, O O'Neill J
Mater Misericordiae University Hospital, Dublin

9. Initial Results of Concomitant LA MAZE with Open Heart Surgery
Booth K, Dickson E, Jeganathan R, Jones M, Graham A
Royal Victoria Hospital, Belfast

10. What Does Brain Natriuretic Peptide Tell us About Progressive Left Ventricular Diastolic Dysfunction?
Collier P, Waterhouse DF, Dawkins IR, Patle AK, Watson CJ, Horgan S, Baugh JA, O'Hanlon R, Ledwidge MT, McDonald KM
St. Vincent's University Hospital, Elm Park, Dublin

11. Transcatheter Aortic Valve Implantation (TAVI) in the Real World
Ni Dhonnchu T, Anwar A, Keenan N, Sugrue D, Hurley J
Mater Misericordiae University Hospital, Dublin

12. A Novel Endovenous Approach for Treatment of Massive Central Venous or Pulmonary Arterial Thrombus, Mass, or Vegetation: The AngioVac Suction Cannula and Circuit
Margey RJP, Sakhuja R, Gandhi S, R. Rogers K, Weinberg I, Jaff MR, Schainfeld R, Rosenfield K,
Section of Vascular Medicine and Peripheral Intervention, Division of Cardiology, Massachusetts General Hospital and Harvard Medical School, Boston, USA

13. A 2-year audit of organisms and sensitivities in patients with Infective Endocarditis in a Quaternary Referral Hospital
Graham C, O'Hare K, O'Connell B, Moloney G, Young V, Tolan M, Daly C, Murphy R
St James's Hospital, James's Street, Dublin

14. Initial Experience of Primary PCI for ST Elevation MI from the perspective of a non-PCI
Pal N, Byrne J, Charlton L, McClements B
Mater Hospital, Belfast Health and Social Care Trust, Belfast

15. A 24/7 Primary Percutaneous Coronary Intervention Service
Dooley M, Belfast Trust pPCI Service Group
Belfast Trust

16. Impact of Renal Insufficiency on Bleeding Events in Patients Undergoing Percutaneous Coronary Intervention
[#]Margey R, *Maree AO, [†]Selzer F, *Adams B, *Patel N, [‡]Jneid H, [†]Marroquin OC, [†]Mulukutla SR, [§]Laskey WK, *Jacobs AK
[#]Massachusetts General Hospital and Harvard Medical School, Boston, MA, *Boston University School of Medicine, Boston Medical Center, Boston, MA; †Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA, [‡]Michael E. DeBakey VA Medical Center and Baylor College of Medicine, Houston, TX, [§]University of New Mexico School of Medicine, Albuquerque, NM

17. On-site Percutaneous Coronary Intervention (PCI) at Altnagelvin Area Hospital has led to a Significant Reduction in Time to PCI in Patients Presenting with NSTEMI and Meets the ESC
Monaghan M, Small C, Hutchinson C, Armstrong E, Smart P, Hughes S, Purvis J, McNeill A, McGlinchey P, Moore M
Altnagelvin Area Hospital, Londonderry

18. Croi MyAction: First Results from an Innovative Community-Based Vascular Prevention Programme in Galway
[1,2]Flaherty G, [1]Gibson I, [1]Walsh AM, [1]Kerins C, [4]Connolly S, [1,3]Crowley J
[1]Croi, West of Ireland Cardiac Foundation, [2]National University of Galway, Ireland, [3]University Hospital Galway
[4]Imperial College Healthcare NHS Trust, London

19. Associations Between Findings on a Cardiac Risk Assessment Questionnaire and Group 2 ECG Abnormalities: Results from the West of Ireland Screening for Sudden Cardiac Death in Young People Study
Joyce E, Devenney D, Gargoum F, Nolan P, McGorrigan C, Crowley J, Nash P, Daly K
Galway University Hospital, Galway

20. Non-Compliant Balloons for Final Kissing Inflation in Coronary Bifurcation Lesions Treated with Provisional T-Stenting: a Pilot Study
Mylotte D, Hovasse T, Ziani A, Lefevre T, Dumonteil N, Louvard Y, Carrie D
Institut Cardiovasculaire Paris Sud, France

Session 5 *Structural Heart Disease*
Chair: Dr. Kevin Walsh

11.00–11.30 "Device Regulation–the industry perspective"
Dr. David Dunham
Regulatory Affairs Manager - UK & Ireland Medtronic Ltd.

11.30–12.30 Oral Presentations

21. Efficacy and Safety of Transcatheter Aortic Valve Implantation: Northern Ireland Experience
Manoharan G, Spence MS, Kodoth V, Maguire C, Anderson L, Doherty R, Smith B, Glover P, Manoharan GB, Tomlin A, McKenna-Maynard M, McAllister P, Gracey H, Dixon L, Johnston N,
Royal Victoria Hospital, Grosvenor Road, Belfast

22. Initial Experience of a Mini Sternotomy Incision in Aortic Valve Replacement
Beattie GW, Nzewi OC,
Department of Cardiothoracic Surgery, Royal Victoria Hospital, Belfast

23. Atrial Septostomy for Severe Pulmonary Arterial Hypertension: Evolving Percutaneous Approaches
Roy AK, McCullagh B, Gulam M, Nashat H, Adamali H, Gaine SP, Walsh KP
Mater Misericordiae University Hospital, Dublin

24. Early Experience with the Watchman Left Atrial Appendage Occluder Device
Neylon MA, Alqaseer M, Asgedom S, Morgan R, McAdam B, Sheahan R, Foley D
Beaumont Hospital, Beaumont, Dublin

25. 25 years of Adult ECMO in Ireland: The history, development and results of the service from 1985 to 2010
Regan R
Department of Perfusion Prof. Eoin O'Malley National Centre for Cardiothoracic Surgery, Mater Misericordiae University Hospital, Dublin

26. Actual Versus Predicted Post Ventricular Assist Device Outcomes in A Mixed Device Group: a Retrospective Study From The National Cardiac Transplant Centre
Joyce E, Doherty M, Buckley U, Anwar A, Ni Dhonnchu T, Kinsella A, Healy D, Wood AE, Nolke L, McCarthy J, Mahon N
Mater MIsericordiae University Hospital, Eccles Street, Dublin

12.30–14.00 Lunch/Exhibition

Session 6 *Imaging/Heart Failure*
Chair: Dr. Angie Brown

14.00–14.30 "Can VADs replace heart transplantation? Contemporary surgical treatment for end-stage heart failure"

Dr. Guy MacGowan
Freeman Hospital, Newcastle upon Tyne, UK

14.30–15.30 Oral Presentations

27. The Early Role of CMR in the Assessment of Cardiomyopathy
Barrett M, Waterhouse DF, Morgan RB, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R
Cardiac MRI Unit, Blackrock Clinic, Blackrock, Co. Dublin

28. Cardiac MRI Findings in Hypertrophic Cardiomyopathy: a Northern Ireland Population
[1]Lyons K, [2]Dixon L, [2]Johnston N, [3]Horan P
[1]Belfast City Hospital, [2]Royal Victoria Hospital, [3]Antrim Area Hospital

29. Atrial and Ventricular Functional Changes on Echocardiography in Newly Diagnosed Untreated Hereditary Haemochromatosis
Almuntaser I, King G, Norris S, Daly C, Ellis E, Murphy R
Departments of Cardiology and Hepatology, St James's Hospital, Dublin

30. Is There a Mortality Risk Associated with Aspirin use in Heart Failure? Results from a Large Community Based Cohort
[1,2]Bermingham M, [1]Shanahan MK, [1]Miwa S, [1]Dawkins I, [1]O'Hanlon R, [1,2]McDonald K, [1,2]Ledwidge M
[1]Heart Failure Unit, St Vincent's University Hospital
[2]School of Medicine and Medical Science, University College Dublin

31. Detection of High Sensitivity TNT Using Fourth Generation Immunoassay in Pulmonary Hypertension Patients Identifies a Subgroup with More Advanced Disease
Roy AK, McCullagh B, McGorrian C, Russell C, Fitzgibbon M, Murray PT, Gaine SP
Mater Misericordiae Hospital, Dublin

32. Does Right Ventricular Function Alone Predict Outcomes After CRT? An Analysis of the MADIT-CRT Population
Campbell P, Takeuchi M, l Bourgoun M, Foster E,. Brown MW, Moss AJ, Pfeffer MA, Solomon SD
Brigham and Women's Hospital, Boston, Mass. USA

15.30–16.00 Poster Presentations
Coffee/exhibition

33. Comparison of Traditional and Novel Definitions of Acute Kidney Injury for the Prediction of Outcomes in Acute De-Compensated Heart Failure
Roy AK, McGorrian C, Nashat H, Tracey C, Kavanaugh E, Brennan A, Maksudova N, Mahon NG, Murray PT
Mater Misericordiae University Hospital, Dublin

34. Biological Variability of Bioelectrical Impedance Testing in a Cardiac Inpatient Setting
Mak G, Murtagh G, O'Connell R, Dawkins I, O'Hanlon R, Ledwidge M, McDonald K
St. Vincent's University Hospital, Dublin

35. Screening for Asymptomatic Left Ventricular Dysfunction Using B-Type Natriuretic Peptide: Effect of Left Ventricular Diastolic Dysfunction on Results: a Report from the STOP-HF Study
Murtagh G, Dawkins IR, Ledwidge MT, Tallon E, O' Hanlon R, McDonald KM
St Vincent's University Hospital, Heart Failure Unit, Dublin

36. B-Type Natriuretic Peptide Response with Peak Exercise and Symptom Reproduction in Determining Heart Failure Diagnosis in a New Diagnostic Heart Failure Clinic: Interim Analysis
Voon KJ, Murtagh G, Badabhagni M, Patle A, Ledwidge MT, O'Hanlon R, McDonald KM
St. Vincent's University Hospital, Dublin

37. Undertreatment of Asymptomatic Left Ventricular Dysfunction: a Report from the STOP-HF Study
Murtagh G, Dawkins IR, Ledwidge MT, Tallon E, O' Hanlon R, McDonald KM
St Vincent's University Hospital, Heart Failure Unit, Dublin

38. The Benefits of the Use of Chronic Phosphodiesterase 5 Inhibitors (PDE5) in Patients with Heart Failure with Reduced Ejection Fraction and Secondary Pulmonary Hypertension: a Single Center Study
Al Qaseer M, Raleigh C, Egan S, Brendan McAdam
Beaumont Hospital, Beaumont, Dublin

39. The Use of Ivabradine in Eligible Heart Failure Population
Khider W, Boles O
Our Lady of Lourdes Hospital, Drogheda, Co. Louth

40. Cost Effectiveness of Adding CMR to Evaluation of Suspected Coronary Ischaemia
Waterhouse DF, Barrett M, Morgan RB, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R
Cardiac MRI Unit, Blackrock Clinic, Blackrock, Co. Dublin

41. B-Type Natriuretic Peptide Association with Persistent Non-Dipping Nocturnal Blood Pressure in Patients with Hypertension and Diabetes After 1 year-Early Markers of Diabetic
Voon KJ, Phelan D, Watson CJ, Bhutta U, Elrasheed O, Murphy N, O'Hanlon R, Ledwidge MT, Ledwidge MT, O'Shea D, McDonald KM
St Vincent's University Hospital, Elm Park, Dublin

42. Establishing a Cardiac MRI Programme In Ireland: 1-Year Experience
Waterhouse DF, Barrett M, Morgan RB, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R
MRI Department, Blackrock Clinic, Blackrock, Co. Dublin

43. Coronary Calcium is More Effective than Diamond Forrester for Cardiology Resource Utilisation at RACPC
McKavanagh P, Donnelly PM, Ball P, Harbinson M, Trinick T, Lusk L, Doyle P,
Ulster Hospital, Dundonald, Belfast

44. Increase in Isovolumic Acceleration (IVA) of the Right Ventricular (RV) Free Wall but No Difference in NT-proBNP Between Endurance Athletes with Athlete's Heart and Healthy Untrained Controls at Rest
McLoughlin B, Flynn I, Clarke J. King G
Eagle Lodge Cardiology. Limerick

45. Atrial Septal Pouches: Can they be Identified on Transoesophageal Echocardiogram?
O'Flynn AM, Moore DP
The Adelaide & Meath Hospital incorporating the National Children's Hospital (AMNCH), Tallaght, Dublin

46. Cardiac CT in an Emergency Department Chest Pain Evaluation Unit in Ireland
[1]Kearns G, [1]Erwin J, [1]Keane D, [1]McCreery C, [1]McDonald K, [1]Quigley P, [1]Quinn M, [2]Dodd, J
[1]Department of Cardiology, St. Vincent's University Hospital, Elm Park, Dublin
[2]Department of Radiology, St. Vincent's University Hospital, Elm Park, Dublin

Session 7 *Young Investigator's Award*
Chair: Dr. Carol Wilson

Judges: Prof. David Wood, Dr. Peter Wilmshurst, Dr. Peter Kearney

16.00–17.0 Oral Presentations

47. Potent Long-term Cardioprotective Effects of Single Low Dose Insulin-like Growth Factor-1 (LD-IGF-1) Treatment Post Myocardial Infarction
O'Sullivan J F, Leblond AL, Kelly G, Kumar A HS, Metharom P, Büneker CK, Alizadeh-Vikali N, Hristova I, Hynes BG, O'Connor R, Caplice NM,
Centre for Research in Vascular Biology, Biosciences Institute, UCC, Cork

48. Waveform Optimisation for Internal Cardioversion of Atrial Fibrillation
[1]Kodoth V, [2]Castro NC, [1]Glover BM, [3]Anderson JM, [3]Escalona OJ, [1]Lau E, [1]Manoharan G
[1]The Heart Centre, Royal Victoria Hospital, Belfast, NI
[2]Department of Electronics, Universidad Simon Bolivar, Caracas, Venezuela
[3]Northern Ireland Bio-Engineering Centre, University of Ulster, Jordonstown, NI

49. LRG: a Novel Biomarker of Ventricular Dysfunction and Heart Failure
*Watson C J, *†Ledwidge MT, *†Phelan D, *†Collier P, *Byrne JC, *Dunn MJ, *†§McDonald KM, *§Baugh JA
*School of Medicine & Medical Science, St Vincent's University Hospital & The Conway Institute of Biomolecular and Biomedical Research, University College Dublin
†Heart Failure Unit, St Vincent's University Hospital Healthcare Group, Elm Park, Dublin
§ Denotes equal author contributions

50. Exercise Training Improves Activity and Psychosocial Wellbeing in Adolescents with Congenital Heart Disease (CHD)
[1]Morrison ML, [1]Sands AJ, [1,2]McCusker CG, [2]McKeown PP, [1]McMahon M, [1]Gordon J, [1]Craig BG, [1]Casey FA
[1]Department of Paediatric Cardiology, The Royal Belfast Hospital for Sick Children, Belfast
[2]The Queen's University of Belfast, Belfast

17.100–17.30 *ICS AGM*

17.45–18.45 *Stokes Lecture*

"Protectig the heart and circulation"
Prof. David Wood
Garfield Weston Professor Cardiovascular Medicine,
International Centre for Circulatory Health,
National Heart & Lung Institute, Imperial College London

19.45 Reception
20.30 Annual Dinner

Saturday 8th October

08.00–09.15 Cardiology Education and Training Update
Chairs: Dr Peter Kearney & Dr Tom Trouton

Session 8 *Revascularisation*
Chair: Dr. Andrew Maree

09.15–10.00 Primary PCI

The Belfast Experience	Dr. Paul Johnston
The National PPCI Plan	Dr. Niall Mulvihill
The UK Experience	Dr. Mark de Belder
Discussion	

Oral Presentations

51. Duration of Balloon Inflation for Optimal Stent Deployment: 5 Seconds is Not Enough
Mylotte D, Hovasse T, Garot P, Salvatella N; Morice MC, Chevalier B, Pichard A, Lefèvre T
Institute Cardiovasculaire Paris Sud

52. Syntax Scoring in Multivessel Coronary Artery Disease: a Multidisciplinary Approach is Best
Hodkinson EC, Noad RL, Spence MS, Johnston PWJ
Cardiology Department, Royal Victoria Hospital, Belfast Trust, Belfast

53. Total but not Partial Discontinuation of Antiplatelet Therapy in ACS Presenters Predicts Poor Clinical Outcome
O'Connor S, Collet JP, Hattab M, Tanguy ML, Silvain J, Barthelemy O, Bellemain-Appaix A, Beygui1 F, Montalescot G
Institut de Cardiologie, INSERM CMR937, Pitié-Salpêtrière Hospital (AP-HP) 75013 Paris, France Université Pierre et Marie Curie, Paris, France

54. Impact of Renal Insufficiency on Prescription of Discharge Medication and 1-year Outcomes After Percutaneous Coronary Intervention
[#]Margey R, [†]Selzer F, *Quiroz R, [‡]Jneid H, [†]Marroquin OC, †Mulukutla SR, [§]Laskey WK, *Jacobs AK,* Maree AO
#Massachusetts General Hospital, Harvard Medical School, Boston, MA; *Boston University School of Medicine, Boston Medical Center, Boston, MA; †Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA; ‡Michael E. DeBakey VA Medical Center and Baylor College of Medicine, Houston, TX; §University of New Mexico School of Medicine, NM

55. In Primary Percutaneous Coronary Intervention Mortality is Low and Largely Predictable
Dooley M, Belfast Trust pPCI Service Group
Belfast Trust, Belfast

56. Single Centre Experience of Contemporary Rotablation Atherectomy
Pal N, Spence M, Manoharan G, Dalzell G, Wilson C, Hanratty C, Walsh S, Riddell J, Johnston P
Royal Victoria Hospital, Belfast

11.00–11.30 Poster Presentation
Coffee

57. Re-Fibrillating the Atrium with Low Energy, Synchronized Shocks After DFT testing
Cronin EM, Baranowski BJ, Chung R, Wazni O, Kanj M, Saliba W, Callahan T, Borek P, and Martin DO
Cleveland Clinic, Cleveland, OH, USA

58. A Comparison of Complication Rates Between Active and Passive Pacemaker Leads
Matiullah S, Canniffe C, Boyle M, Aziz W, Phelan D, O'Sullivan B, Daly K, Crowley J, Sharif F, MacNeill B, Nash P
Galway University Hospital, Galway

59. Varying Prevalences of Chronotropic Incompetence from Different Disease Definitions
J Groarke, R Y Lim, P Owens, AO Maree
Department of Cardiology, Waterford Regional Hospital, Waterford

60. Implantable Cardioverter Defibrillator Therapy in a Mixed Adult Congenital Heart Disease Population
Joyce E, O'Brien C, Buckley U, Keaney J, Doran E, Savage R, Walsh K
Mater Misericordiae Hospital, Eccles St, Dublin

61. The Degree of QRS Shortening After Resynchronization Therapy as a Predictor of LV Reverse Remodeling: a Long Term Retrospective Observational Study in a Single Irish Center
AlQaseer M, Jamshaid M, Collis R, Collins A, Sheahan R
Beaumont Hospital, Beaumont, Dublin

62. Sprint Fidelis Lead Failure: a Report from Northern Ireland
[1]Kodoth V, [2]Gordon B, [1]Ashfield K, [1] Lau E, [1]Wilson C, [2]Chew EW, [1]Roberts MJ
[1]The Heart Centre, Royal Victoria Hospital, Belfast
[2]Cardiology department, Belfast City Hospital, Belfast

63. An Overview of Pacemaker and Device Implantations in the West of Ireland
Canniffe C, Matiullah S, Aziz W, Boyle M, O'Sullivan C, Phelan D, Daly K, Crowley J, Nash P, Sharif F, MacNeill B
Galway University Hospital, Galway

64. Primary Percutaneous Coronary Intervention "False Positives"
Dooley M, Belfast Trust pPCI Service Group
Belfast Trust, Belfast

65. Impact of Targeted Subspecialist Care Versus Generalist Care on Lengths of Hospital Stay and Costs across Common Diagnostic Groups
Groarke J, Maree AO, Owens P
Department of Cardiology, Waterford Regional Hospital, Waterford

66. Constrictive Pericarditis, Still a Diagnostic Challenge in the Twenty-First Century: an Irish Single-Centre Retrospective Cohort Study
Moran DP, Khalil A, O Donnell A, Kiernan TJ
Dept of Cardiology and Cardiothoracic Surgery, University College Cork, Cork University Hospital, Cork

67. Percutaneous Left Atrial Apendage Closure (PLAATO): 5-year Outcomes
Neylon MA, O'Connor SA, Mylotte D, McAdam B, Sheahan R, Foley D
Beaumont Hospital, Beaumont, Dublin

68. Real World Costs of Non-Cardiac Chest Pain Admissions
Groarke J, O'Brien J, Go G, Susanto M, Owens P, Maree AO
Department of Cardiology, Waterford Regional Hospital, Waterford

69. Evolving Trends of Intra-Aortic Balloon Pump Counterpulsation (IABP) Usage in a Tertiary Cardiac Transplant Centre from 2008 to 2010
Anwar AA, Roy A, Mustafa G, Joyce E, Buckley U, Nashat H, Sugrue D, McCann H, Blake G, Mahon N
Mater Misericordiae Hospital, Dublin

70. Atrial Fibrillation in Paced Rhythm: "Under-Diagnosed and Under-Recognized"
Alkhalil M, Quinn S, Magill P, Tauro R, Prabhavalkar S
Belfast Health & Social Care Trust, Belfast

71. Cardiac Contribution to the Workload of Medical Assessment Units (MAUs)
Groarke J, McMenamin L, McConway L
Medical Assessment Unit, Waterford Regional Hospital, Waterford

Session 9 *Electrophysiology/General Cardiology*
Chair: Dr. Joe Galvin

11.30–12.00 "**Current Management of Ventricular Tachycardia"**
Prof. Noel Boyle
Prof of Medicine
Director-Cardiac Electrophysiology Labs
UCLA Cardiac Arrhythmia Centre

12 noon–1.00 pm Oral Presentations

72. Cost and Resource Implications of Defibrillator Lead Fractures
[1,2]Groarke J, [2]Buckley U, [1]Collison D, [2]O'Neill, [2]Mahon N, [1]Foley B
[1]St. James's Hospital, Dublin;
[2]Mater Misericordiae University Hospital, Dublin

73. Riata Lead Failure: a Report from Northern Ireland (NI) Riata Lead Screening Programme
Kodoth V, Cromie N, McEneaney D, Wilson C, Lau E, Roberts MJ
Royal Victoria Hospital, Belfast

74. Atrial Fibrillation in Ireland. Highly Symptomatic and Associated with a High Incidence of Co-Morbidities: Insights from the RealiseAF Registry
O'Neill J, Keelan T, Galvin J, Conway M, Gumbrielle T, Sheahan R, McFadden E, Murphy R, McCaffrey D
On behalf of the RealiseAF Irish Investigators

75. Long Term Outcomes in Patients Receiving Cardiac Resynchronization Therapy: a 10-year Single Center Irish Registry
AlQaseer M, Jamshaid M, Collis R, Collins R, Wotchcorn R, Sheahan RG
Beaumont Hospital, Dublin

76. Use of the Stand-Up Test for the Long QT Syndrome in a Screening Population for Inherited Cardiac Diseases
McGorrian C, Constant O, O'Donnell C, Keelan T, Galvin J, O'Neill J, Mahon N
The Heart House, Mater Misericordiae University Hospital, Dublin

77. Out of Hospital Cardiac Arrest: a Review of Ambulance Data in Dublin Mid-Leinster
[1]Burke J. [2]Kelleher C
[1]UCD School of Nursing Midwifery and Health Systems, Dublin
[2]UCD School of Public Health, Physiotherapy and Population Science, Dublin

13.00 Close of meeting

Ir J Med Sci (2011) 180 (Suppl 11):S371–S409
DOI 10.1007/s11845-011-0752-y

Session 4: Hot Topics

Oral Presentations

1. Our Experience with Subcutaneous Implantable Defibrillators

Buckley U, Joyce E, Mustafa G, Keaney J, Galvin J, Keelan T, Chuktai Z, Walsh K

Miseraecordiae Hospital, Eccles Street, Dublin and The Mater Private Hospital, Eccles Street, Dublin

Aim: To review the patients receiving the 'Cameron' subcutaneous implantable defibrillator system (ICD). Subcutaneous ICDs may have potential benefits over the conventional transvenous system due to less risk of complications. The pulse generator and the electrode are implanted subcutaneously in the thoracic region. An electrode with an 8 cm coil and two sensing electrodes are implanted adjacent to the manubrio-sternal joint and the xiphoid process. No fluoroscopy is required. The procedure is performed in the cardiac theatre instead of the catheterisation laboratory.
Method: We reviewed the patients receiving the novel subcutaneous implantable defibrillator in the Cardiology Department of the Mater Misericordiae Hospital and the Mater Private Hospital.
Result: Five male patients received the 'Cameron' subcutaneous implantable defibrillator. The average age was 38.2 (18–71). Of these patients, three had prior transvenous systems explanted due to complications; one with a lead fracture, the second patient had septic emboli from an infected defibrillator lead, and the third with device erosion requiring explant. The indications for implantation were as follows: one with hypertrophic obstructive cardiomyopathy with lv septal myomectomy (primary prevention), one hypertrophic cardiomyopathy (secondary prevention, prior ventricular fibrillation), one dilated cardiomyopathy (DCM) with prior atrial septal defect closure and left ventricular function 20% (primary prevention), one DCM, one ischaemic cardiomyopathy and one patient with complex congenital heart disease resulting in progressive systemic right ventricular failure secondary to transposition of the great arteries, prior ventricular septal defect and mustard procedure (primary prevention). All five patients underwent successful implantation of the subcutaneous device. Ventricular fibrillation was successfully detected and terminated with maximum output 65 J therapy in all patients. There were no complications during device implantation. The average duration since implant is 3.6 months (2–6) and at subsequent device interrogations one patient has under sensing of premature ventricular complexes.
Conclusion: As this new device sits entirely outside the thoracic cavity it avoids complications such as pneumothorax, difficulty accessing the venous system, cardiac perforation, lead fracture and in the case of the need for lead explant it would not be associated with the same risks. The clinical utility may be in patients requiring ICD therapy but who do not require bradycardia pacing or cardiac resynchronization therapy.

2. Characteristics and Outcomes of Patients Undergoing Catheter Ablation of Atrial Fibrillation at a Single Centre

Buckley U, Anwar A, Keaney J, Mustafa G, Joyce E, McCann C, Keelan T, Galvin J

The Mater Private Hospital, Eccles Street, Dublin

Aim: We sought to assess the patient selection and outcomes in atrial fibrillation (AF) ablations in our centre.
Methods: We reviewed all patients who continue to follow up in the Mater Private Hospital undergoing atrial fibrillation ablations between January 2006 and September 2010. The data were retrospectively collected by examination of procedure reports and clinic letters stored on patients' electronic medical record. The techniques used were lasso-guided circumferential focal ablation using fluoroscopy, CARTO or NAVEX imaging systems and irrigated 4 mm tip radiofrequency catheters, dual phased non-irrigated circular ablation frontiers PVAC, Bard mesh array catheters or cryoballoon catheters for lesion creation.
Results: Two hundred and forty-eight ablation procedures for AF were performed in 131 patients (80% male) between January 2006 and September 2010. The mean duration of follow up was 16.35 months (range 1–57). The average age was 55 years (range 30–74) and 54% had more than one procedure. The mean duration of arrhythmia was 5.6 years (range 1–23). Left ventricular dysfunction was present in 13.7%. On the day of the procedure the rhythm was deemed to be long term persistent in 12.9%, persistent in 50%, and paroxysmal AF in 36%. There was a blanking period of 6 weeks post procedure. Post AF ablation there were 56% of patients in sinus rhythm, 33% paroxysmal, 4.5% persistent and 5.3% long term persistent AF (Table 1). The complication rate was 5.6% of total number of procedures performed, with six pericardial effusions (5 with tamponade and one requiring emergency cardiothoracic surgery), three venous puncture complications, one cerebrovascular accident, one phrenic nerve palsy, one pulmonary vein stenosis, and two with pericarditis.

Table 1 Predictors of Success: Initial Rhythm

	Initial rhythm (no. of patients)	Sinus rhythm post procedure
Paroxysmal AF	49	36 (73%)
Persistent AF	65	37 (56.9%)
Long term persistent AF	17	6 (35%)

Conclusion: Catheter ablation of AF in this cohort of patients proved feasible with a low risk of serious complications and no long term adverse sequelae. Recurrence of atrial fibrillation was highest in those with long term persistent AF at baseline (65%), and lowest in those with paroxysmal AF (27%). Most common cardiac arrhythmias and

ideally should be performed for paroxysmal fibrillation before persistent or long term persistent fibrillation develop.

3. Renal Denervation for Resistant Hypertension

Mylotte D, Garot P, Unterseeh T, Louvard Y, Benamer H, Morice MC

Institut Cardiovasculaire Paris Sud, Paris, France

Introduction: Renal denervation has recently emerged as a novel treatment strategy for resistant hypertension. However, the only data available supporting this therapy is from a single randomized controlled trial, of highly selected patients.
Objectives: The aim of this study is to assess the efficacy of renal denervation in a large cohort of relatively unselected patients with resistant hypertension, and to identify predictors of treatment success/failure.
Methods: In order to meet the study objectives, we recruited consecutive patients with treatment-resistant hypertension into a prospective multicentre registry, at two French centres. Hypertension was assessed by twice-daily home BP measurements for 2 weeks, and with ambulatory BP monitoring for 24-h prior to study enrolment. Assessment of patient medication compliance was performed with a standardized questionnaire. In addition, all patients underwent screening renal artery anatomical evaluation to confirm anatomical eligibility. Baseline laboratory analyses were performed prior to study inclusion. Clinical follow-up with office, home and 24 h ambulatory BP measurements are performed at 1, 6 and 12 months.
Results: Preliminary data is available on 30 patients; mean age 66 ± 9.2 years; 23.3% female; mean duration of hypertension 12.0 ± 4.1 years; mean number of antihypertensive medications 5.0 ± 1.0. Among these patients, 10.0% had significant renal dysfunction. Procedural success was achieved in all patients with a mean 5.0 ± 1.1 ablations performed for each renal artery. There were no procedural complications. Prior to renal denervation, the average systolic and diastolic BP on ambulatory monitoring was 158.2 ± 21.7 and 87.1 ± 7.7 mmHg, respectively. At 1-month follow-up, the mean BP on ambulatory monitoring were 132.3 ± 22.1 mmHg ($p < 0.0001$) and 71.4 ± 7.8 mmHg ($p < 0.0001$), respectively.
Conclusions: Preliminary data suggests that renal denervation results in highly significant BP reductions in patients with resistant hypertension at 1 month. Additional information will be available for presentation in October 2011.

4. Outcome of Cardiac Surgery in Patients Initially Refused Surgery

Soo A, Nzewi O, Graham A

Department of Cardiac Surgery, Royal Victoria Hospital, Grosvenor Rd, Belfast

Objectives: Despite advancement in medical therapies, surgery remains an important treatment option for cardiac diseases. As the population ages, patients present with more complex cardiac problems and comorbidities. This contributes to increased surgical risk. With stringent auditing and open publication of surgical results, some surgeons may opt to turn down such high risk patients denying them a potentially lifesaving procedure. In this study, we aim to examine the results of patients who were operated on following an initial refusal for surgery.
Methods: Data was collected retrospectively from the local hospital database (Intellect) over a 10-year period. Patients included in the study had previously been turned down for open heart surgery by a consultant cardiac surgeon and subsequently underwent the same surgery performed by a different surgeon. Data examined included reasons for surgical refusal, estimated surgical risk, and outcome.
Results: 64 patients were included in the study. The commonest reason offered for surgical refusal was significant patient comorbidity (29.7%) Other reasons included poor coronary target for revascularisation (20.3%), poor heart function (17.2%), advanced age (3.1%), lack of conduit (3.1%) and obesity (3.1%). The average Euroscore for this group of patients were $8 \pm 3\%$ (additive) and $15.9 \pm 14.5\%$ (logistic). There were six hospital mortalities in this series (9.3%). The observed:expected mortality rate was 0.58.
Conclusion: In this study, patients who were operated on following a first time refusal of surgery had better than predicted outcomes, as predicted by conventional risk assessment. Therefore, we advocate that a second opinion should be routinely sought for patients who had been turned down for surgery.

5. A Case Series Documenting the First Irish Experience Utilising Optical Coherence Tomography in Coronary Intervention

Phelan D, O'Sullivan B, Canniffe C, Matiullah S, Nash P, McNeill B, Crowley J, Daly K, Sharif F

Galway University Hospital, Galway

Cardiovascular optical coherence tomography (OCT) is a catheter-based invasive imaging system. Employing light rather than ultrasound, OCT produces high-resolution in vivo images of coronary arteries. The image is formed by the backscattering of light from the vessel wall. Using a wavelength of 1,300 nm the tissue penetration is limited to 1–3 mm as compared with 4–8 mm achieved by intravascular ultrasound (IVUS). However OCT offers significantly improved axial resolution (12–18 vs. 150–200 μm) and lateral resolution (20–90 vs. 150–300 μm) when compared to IVUS. The new frequency domain OCT systems can acquire 100 frames/s and have pullback speeds of up to 20 mm/s with the ability to scan 4–6 cm length epicardial coronary vessels in <5 s. These pullback speeds permit the use of a single, high rate (4 cc/s) bolus injection of contrast to produce a blood-free environment. Images are recorded by a fiberoptic wire that rotates inside a fluid-filled polymer tube which is compatible with 6-F guiding catheters. It is advanced distally to the segment of interest over a conventional angioplasty guidewire (0.014 in.). In our initial experience with the OCT we noticed superior coronary imaging including minimal lumen area, percentage lumen obstruction, percent neointimal hyperplasia, stent apposition and stent expansion. In addition, OCT is also useful for evaluating minimal stent cross section area, lumen gain and late lumen loss. All these parameters are based on the evaluation of the lumen-vessel/stent interface where OCT can be potentially useful clinically. Plaque protrusion and stent-edge dissection are other common intervention-related parameters readily visible on OCT images. Given its high resolution, OCT has the potential for improved tissue characterisation. Fibrous cap thickness may also be measured and unlike IVUS OCT can penetrate calcium and can identify thrombus. The main drawback of OCT is the requirement of blood clearing for imaging which can potentially increase the contrast load, especially if multiple runs are required. Here we present the first Irish experience using OCT in 20 patients and describe the potential benefits and difficulties using this new intravascular imaging technique.

6. The Role of Cardiac MRI Perfusion in the Investigation of Coronary Ischaemia

Morgan RB, Waterhouse DF, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R

Department of Cardiology, Beaumont Hospital Dublin, Cardiac MRI Unit Blackrock Clinic, Blackrock, Dublin

Background: Cardiovascular magnetic resonance imaging (CMR) is an advanced imaging modality to evaluate cardiac structure, function, myocardial fibrosis/infarction and inducible myocardial ischaemia. A recent large European registry highlighted the role of CMR in a wide array of cardiovascular conditions, avoiding the need for further imaging. A safe imaging technique, it avoids the need for ionising radiation providing prognostic information, influencing patient management and potentially avoiding the need for other investigations.
Methods: Over a 12-month period, 178 patients were referred for CMR. 111 underwent adenosine perfusion imaging to detect/quantify inducible ischaemia. Patient data was collected through outpatient and chart review. Data was analysed utilising SPSS software.
Results: Of 111 patients assessed for ischaemia 59.5% were male, mean age 63 years (±12 years). Indications for perfusion CMR were: equivocal stress test (11%); chest pain with normal coronary angiography (10%); assessment of functional significance of coronary lesions (46%); viability (17%) and other (16%). CMR established the diagnosis accurately in 96.4% of patients. A new diagnosis was made in 42% (including inducible ischaemia, AS, non-cardiac findings). CMR findings impacted management decisions in 88% of cases—medication changes in 27%; percutaneous intervention indicated in 33% of patients; surgery (incl. ICD implantation) was indicated in 9%; Invasive angiography +/− PCI was indicated in 27%. In 16% of cases, patients were discharged and in 35% invasive angiography was avoided as a result of reassuring cardiac MRI findings—of this cohort, 9 patients (8%) have had a cardiac admission over the period of follow up-ave 7.5 months. Further investigation with repeat CMRI was advised 11% of patients.
Conclusion: CMR is an invaluable tool in the evaluation of cardiac patients and has an important impact on patient management with the potential to target appropriate investigations and interventions in specific groups.

Poster Presentation

7. Systemic Embolic Events Other than Stroke or TIA from Paradoxical Embolization via Patent Foramen Ovale

Margey R, Arzamendi D, Hynes B, Elmariah S, Renfigo-Moreno P, Schainfeld R, Jaff MR, Inglessis I, Palacios IP

Interventional Cardiology and Vascular Medicine, Division of Cardiology, Massachusetts General Hospital and Harvard Medical School, Boston, MA

Background: Patent foramen ovale (PFO) and its association with cryptogenic stroke in the young is well established. However, paradoxical embolization to the extracranial arterial circulation is poorly characterized.
Methods: From 832 patients undergoing transcatheter closure of PFO between 2001 and 2010; we identified 29 cases in which the indication for closure was non-cerebrovascular embolic events representing 3.5% of cases. Demographic, clinical, procedural characteristics plus immediate and long-term follow-up were described.
Results: Presentation: six Acute MI, nine retinal emboli, six renal infarctions, three radial artery occlusions, three splenic infarcts, and two lower extremity arterial emboli. Mean age was 46.4 years (±14 years). M: F ratio 1:1.1. 21/29 (72%) were not on anti-thrombotic or anticoagulant agents at presentation, 7/29 (28%) were on aspirin alone. 11 cases (38%) had co-existent May-Thurner syndrome. 13 patients had atrial septal aneurysm or hypermobile septum. 13/29 (44.8%) had a positive hypercoagulable screen. In two cases, no PFO could be identified at angiography. 17/27 (58%) were closed with an Amplatzer Cribriform device, 5 Helix device, 3 Cardioseal device, 2 with an Amplatzer ASD device. Procedural successful was 100%. In-hospital, one Helix device embolization occurred—successfully retrieved percutaneously; an Amplatzer device was placed instead. No other in-hospital or vascular access complications occurred. 12 patients were treated with anti-platelet monotherapy, 5 with dual anti-platelet therapy, 3 with warfarin, and 9 with combination warfarin and aspirin. In follow-up, no AI developed; effective defect closure was 100% with no significant residual shunting. No further arterial embolic events or device embolization occurred. Median follow-up was 376 days (11–2,195 days).
Conclusions: This represents the largest case series of PFO associated non-cerebrovascular paradoxical emboli. Screening for hypercoagulable defects and co-existent May-Thurner syndrome in these cases is warranted due to their high occurrence. These patients can be successfully treated with transcatheter defect closure, with no recurrent events in follow-up.

8. Contemporary Outcomes of Aortic Valve Replacement in Octogenarians

Mustafa G, Anwer A, Buckley U, Bajrangee A, Galvin J, Keelan E, Wood AE, McCarthy J, Redmond M, Hurley J, Noelke L, O O'Neill J

Mater Misericordiae University Hospital, Dublin

Introduction: The number of elderly patients requiring aortic valve replacement (AVR) continues to increase. Transcutaneous aortic valve intervention is gaining acceptance as an alternative to open heart surgery for people with symptomatic aortic stenosis and significant comorbidities, often in very elderly patients. However, conventional AVR remains the procedure of choice for elderly patients with aortic valve disease who are surgical candidates. We sought to describe contemporary outcomes in elderly (>80 years old) patients undergoing conventional AVR.
Methods: We retrospectively identified patients >80 years old who underwent AVR alone or AVR in combination with coronary artery bypass grafting (CABG) at the Mater Misericordiae University Hospital, Dublin, Ireland between 2005 and 2010. Clinical records were obtained and reviewed. Data are presented as mean ± SD unless otherwise stated.
Results: Over 5 years, 68 patients (29 men and 39 women, mean 82 ± 2.2 years) underwent open heart surgical AVR. Operative mortality was 8.8% (6/68). The median length of stay in the hospital was 21 days. Symptoms before surgery were dyspnoea in 92.6%, chest pain in 78%, and syncope in 25%. Before AVR, 9% patients had renal impairment, 13% had atrial fibrillation, 47% had left ventricular systolic dysfunction, 78% had concomitant coronary artery disease, 3% had prior CABG, 57% had hypertension and 10% had diabetes mellitus. Post surgery, the percentage of patients who developed new onset atrial fibrillation, renal failure, and stroke were 47, 22 and 12%, respectively. Overall survival at 1, 6, 12, and 18 months was 91, 89, 86, and 86%, respectively.
Conclusions: The outcome after AVR in selected octogenarians is excellent; the risks of surgery are acceptable and follow up of these patients suggests satisfactory intermediate survival. Conventional AVR in elderly patients with low to intermediate risk is a reasonable option and should not be withheld on the basis of age alone.

9. Initial Results of Concomitant LA MAZE with Open Heart Surgery

Booth K, Dickson E, Jeganathan R, Jones M, Graham A

Royal Victoria Hospital, Belfast

Introduction: With a prevalence of 0.4% in the general population, the presence of atrial fibrillation (AF) increases with age and with the presence of heart disease [1]. AF is associated with an odds ratio for death of 1.5 for men and 1.9 in women [2]. Ablation using discreet field radiofrequency to isolate the pulmonary veins and resection of the left atrial appendage is performed in our unit with concomitant open heart procedures to treat patients with non-lone AF, as recommended by national NICE guidelines [3].
Methods: All patients who underwent MAZE procedure with concomitant heart surgery between December 2004 and December 2009 were retrospectively reviewed using computer records and patient charts.
Results: A total of 27 patients were identified with 20 female and 7 male and a median age of 67 (range 51–77). A range of concomitant procedures included mitral and aortic valve surgery and coronary artery bypass grafting (CABG), with the majority undergoing mitral valve replacement (8 patients, 29.6%). 2 patients (7.4%) died in the post-operative period and median follow up for the remaining 25 patients was 16 weeks (range 4–208). 100% of patients remained on anti-arrhythmic medication and anti-coagulation for 3 months post-operatively. Maintenance of sinus rhythm on follow up was recorded in 16 patients (64%) prior to referral for DC cardioversion. 8 patients were recorded as AF (32%) and two patients had permanent pacemaker insertion (4%). 2 TIA's were recorded with no post-operative CVA's. Further follow-up information is in progress currently with up to date results of rhythm and medication status of these 25 patients.
Conclusion: In this series from our unit we have shown successful restoration of sinus rhythm in 64% of patients who presented with concomitant heart disease requiring open heart surgery and suggest the MAZE using radiofrequency ablation as a treatment strategy for these patients.
References

1. Benjamin EJ, Wolf PA, D'Agostino RB et al. Impact of atrial fibrillation on the risk of death: the Framingham Heart Study. Circulation. 1998;98(10):946–952.
2. Fuster, Ryder et al. ACC/AHA/ESC Guidelines for the Management of Patients With Atrial Fibrillation: Executive Summary A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the European Society of Cardiology Committee for Practice Guidelines and Policy Conferences (Committee to Develop Guidelines for the Management of Patients With Atrial Fibrillation) Developed in Collaboration With the North American Society of Pacing and Electrophysiology. Circulation. 2001;104:2118.
3. Atrial Fibrillation, National clinical guideline for management in primary and secondary care, CG36 NICE Guideline, 2006.

10. What Does Brain Natriuretic Peptide Tell us About Progressive Left Ventricular Diastolic Dysfunction?

Collier P, Waterhouse DF, Dawkins IR, Patle AK, Watson CJ, Horgan S, Baugh JA, O'Hanlon R, Ledwidge MT, McDonald KM

St. Vincent's University Hospital, Elm Park, Dublin

Background: Heart failure with preserved ejection fraction is commonly preceded by a prolonged asymptomatic phase during which progressive left ventricular diastolic dysfunction (LVDD) develops. The purpose of this study was to assess whether B-type natriuretic peptide (BNP) could distinguish those with progressive LVDD from those whose diastology remained stable.
Methods: This was a retrospective cohort substudy of the STOP-HF trial [NCT00921960] an ongoing randomised controlled study involving patients with risk factors for heart failure that are being serially followed with clinical and echocardiographic assessment. We defined LVDD progression using changes in left atrial volume index (LAVI), a robust continuous echocardiographic measure of LVDD whereby progressors had a LAVI increase of >3.5 ml/m^2 from an initial LAVI between 20 and 34 ml/m^2. From 518 patients that underwent serial clinical and echocardiographic assessment, 228 patients fulfilled these criteria and were included in the analysis.
Results: 34 (15%) patients displayed evidence of LVDD progression and were compared to the remaining population. Mean follow up was 14 ± 5 months. At baseline, progressors were older (68 ± 8 vs. 65 ± 10 years; $p < 0.05$), were more likely to be treated with beta-blockers [17 (50%) vs. 49 (25%); $p < 0.05$], had higher levels of BNP [28 (14:44) vs. 17 (9:34); $p < 0.05$] and had higher left ventricular mass indices [105 ± 27 vs. 95 ± 23; $p < 0.05$]. No significant gender difference or difference in rates of hypertension, diabetes mellitus, coronary artery disease, obesity or smoking was noted between cohorts. Although BNP correlated with LAVI at both timepoint 1&2 ($p < 0.001$), linear regression analysis revealed that even significant increases in LAVI would anticipate just small increases in BNP of a magnitude within biological variability.
Conclusions: Clinically, changes in BNP appear to be relatively indifferent to LVDD progression and pronounced changes in LAVI. Given the emerging epidemic of heart failure, more accurate biomarkers are urgently needed to aid detection of those at high risk of LVDD progression.

11. Transcatheter Aortic Valve Implantation (TAVI) in the Real World

Ni Dhonnchu T, Anwar A, Keenan N, Sugrue D, Hurley J

Mater Misericordiae University Hospital, Dublin

Introduction: Symptomatic Aortic Stenosis has a mortality of 50% at 1 year (PARTNER 2010). A significant proportion of these patients are considered high/prohibitive risk for surgery. TAVI is an alternative treatment option in this patient group.
Objective: To outline our results in a single centre study over a 2-year period.
Methods: Nineteen patients with symptomatic aortic valve disease, deemed non surgical candidates (following MDM discussion) for surgery, were included in the study. These patients underwent TAVI with the Edwards valve (Edwards Lifesciences) between November 2008 and September 2010.
Results. Mean age at implant was 81.47 years (±12.47). Mean logistic EuroSCORE was 20% and mean STS score was 27.32%. Baseline characteristics included coronary bypass grafting 47.37%, coronary artery disease 42.10%, concomitant mitral valve disease 31.58% and chronic kidney disease 42.11%. 78.95% of valves were inserted transfemorally while 21.05% were inserted transapically. Successful valve deployment was observed in 100% with a 0% conversion to open surgery. The incidence of coronary obstruction was 0% and valve embolization was 5.3% (with successful subsequent redeployment). The mean peak gradient was reduced from 84.38 to 21.75 mmHg. The aortic valve area was increased from 0.7 to 1.6 cm^2. Paravalvular leaks were classified as none (15.79%), trivial (42.11%), mild (36.84%), moderate (5.3%) and severe (0%). Postoperative complications included bleeding requiring re-operation (0%), dialysis (5.3%), stroke (10.6%), tachyarrhythmias (15.79%) and myocardial infarction (0%). 30 day mortality was 5.3%. Patient NYHA status was reduced from 3.13 to 1.5.
Conclusions: TAVI IS associated with comparable mortality as predicted by surgical risk calculators for the treatment of patients at high/prohibitive surgical risk. Significant improvement in functional status post procedure was also noted.

12. A Novel Endovenous Approach for Treatment of Massive Central Venous or Pulmonary Arterial Thrombus, Mass, or Vegetation: The AngioVac Suction Cannula and Circuit

Margey RJP, Sakhuja R, Gandhi S, Rogers RK, Weinberg I, Jaff MR, Schainfeld R, Rosenfield K

Section of Vascular Medicine and Peripheral Intervention, Division of Cardiology, Massachusetts General Hospital and Harvard Medical School, Boston, USA

Introduction: Patients with right atrial, tricuspid valve, pulmonary arterial and iliocaval thrombus, mass or vegetation are at risk for significant short and long-term morbidity and mortality. Currently, limited non-operative options are available for these patients. Optimal management of these conditions remains uncertain. The AngioVac suction cannula and circuit is a novel minimally-invasive endovenous suction cannula aimed at removing "undesirable intravascular material" (UIM) from the venous, right atrial, or pulmonary arterial system.
Methods: All patients with central venous and/or pulmonary arterial and/or right atrial mass treated with the AngioVac cannula and circuit were retrospectively evaluated. Procedural outcomes, including procedural success and procedural mortality, were evaluated. Procedural success was defined by (1) removal of target pathology, (2) lack of procedural complication and/or (3) in accordance with the goals of the treating physician.
Results: A total of 40 cases have been performed. Mean age of the cohort was 54.4 years with 57.5%:42.5% M:F ratio. 30% presented with catheter-associated vegetation (25% of whom had co-existent valvular vegetation), 37.5% presented with extensive iliocaval thrombosis, and 32.5% presenting with massive or submassive PE. Overall Procedural success was 75%, with the best outcomes for iliocaval clot 93.3%, followed by catheter-associated vegetation (83.3%; Valvular involvement 33%) and least favourable outcomes for Pulmonary embolism 46.2%. 10% were converted to open operative procedures. There was one (2.5%) procedural death.
Conclusions: Early experience suggests that AngioVac device is a possible alternative to surgical intervention, though atrial/ventricular perforation represents rare but serious complications. In early cases, the AngioVac appeared more effective for catheter-associated or non-adherent right atrial or iliocaval UIM, than for pulmonary emboli, especially in the distal main pulmonary arteries, and tricuspid valve vegetations. These data suggest that procedural success may be optimized by appropriate patient/pathology selection, ongoing improvements in procedural processes and techniques, as well as evolution of the device.

13. A 2-Year Audit of Organisms and Sensitivities in Patients with Infective Endocarditis in a Quaternary Referral Hospital

Graham C, O'Hare K, O'Connell B, Moloney G, Young V, Tolan M, Daly C, Murphy R

St James's Hospital, James's Street, Dublin

Aims: To identify causative organisms and antibiotic sensitivities in infective endocarditis (IE) patients in St James's Hospital, Dublin over a 2-year period.
Methods: Retrospective chart review, microbiological, pathological and surgical database review of 47 patients with a diagnosis of IE treated in St James's Hospital between January 2009 and December 2010.
Results: The 47 patients identified were reviewed by a multidisciplinary team. Thirty-nine patients had native valve endocarditis, eight had prosthetic valve endocarditis. There were six patients with a history of IVDA. Surgery was performed in 23 (49%). Overall in-hospital mortality was 19%. Twenty-four patients presented in 2009. Of these, 13 (54%) were culture negative, 6 (25%) were found to have staphylococcus, 1 (4%) had streptococcus and 3 (12%) had enterococcus. The streptococcus case identified was sensitive to penicillin. Of the six cases of staphylococcus five (83%) were resistant to penicillin, two (33%) were resistant to flucloxacillin and all were sensitive to gentamicin. In 2010 there were 23 cases of infective endocarditis. Fourteen (60%) were culture negative, four (17%) had staphylococcus, three (13%) had streptococcus, one (4%) had enterococcus and three (13%) were caused by other organisms. Again all streptococcus species isolated were sensitive to penicillin. Of the six staphylococcus species isolated, four (60%) were resistant to penicillin, four (60%) were resistant to flucloxacillin and all were sensitive to gentamicin.
Conclusion: Mortality for index cases of IE in a quaternary referral centre remains high. The most frequently identified organism was staphylococcus with high rates of antibiotic resistance especially to penicillin.

14. Initial Experience of Primary PCI for ST Elevation MI from the Perspective of a Non-PCI

Pal N, Byrne J, Charlton L, McClements B

Mater Hospital, Belfast Health and Social Care Trust, Belfast

Introduction: Primary PCI (PPCI) is the preferred revascularization procedure for ST elevation myocardial infarction (STEMI) if the procedure can be performed within 120 min after first medical contact (FMC). For patients who present directly to an acute hospital without PCI capability, rapid transfer to a PPCI centre is recommended provided time delays are not excessive. A PPCI service was launched in Belfast in December 2009. This study assessed the feasibility of PPCI as the treatment of choice for eligible patients presenting with STEMI to the Mater Hospital, Belfast which does not have PCI facilities.
Patients: From the MINAP database 55 consecutive STEMI patients were identified, who were transferred for PPCI. No patients received lytic therapy for STEMI during this period. Initially ambulance service protocols were not altered.
Results: 29 (53%) patients (Group 1) arrived by paramedic ambulance and 26 (47%) (Group 2) self-referred to the Emergency Department (ED). The median time from first FMC to first balloon inflation was longer in Group 1 than Group 2 (120 vs. 100 min, $p = 0.014$). Only 51% of Group 1 patients achieved reperfusion within 120 min of FMC compared with 72% of Group 2 patients. There was no mortality in either group.
Conclusion: In the health care system in Belfast, PPCI is feasible and safe as the default revascularization strategy for patients with STEMI who present to a non-PCI capable acute hospital. However when FMC is with a paramedic ambulance crew, transportation initially to the local ED followed by inter-hospital transfer significantly lengthens the time taken to achieve reperfusion. These data emphasize the importance of maximizing the proportion of STEMI patients who are transported directly to the PPCI centre. This is the focus of current efforts in the Belfast PPCI Service.

15. A 24/7 Primary Percutaneous Coronary Intervention Service

Dooley M, Belfast Trust pPCI service group

Belfast Trust, Belfast

Introduction: Primary percutaneous coronary intervention (pPCI) is the preferred treatment for ST elevation myocardial infarction (STEMI) if a call-to-balloon (CTB) time <150 min can be achieved. A 24/7 pPCI service was introduced in Belfast in December 2009.
Results: In the 13 month period from February 2010 to February 2011 a total of 236 patients activated the pPCI pathway. 70.8% were male (mean age 61.5 years; range 30–99 years). 71% of cases presented "out of hours". Of the 236 patients, 24 (10%) were non-acute coronary syndrome (ACS) and 9 patients had a non-STEMI. The remaining 203 patients had STEMI and 198 proceeded to pPCI. 5 STEMI patients did not have pPCI (died before lab, age 99, distal disease, normal coronaries, coronary artery dissection). Analysis was performed on the 203 patients with STEMI. pPCI was performed via a radial approach in 85%, 93% had stent inserted (68% drug eluting), 79% had a glycoprotein antagonist (Abciximab 97%) and an intra aortic ballon pump was inserted in 12 cases (6%). In hospital mortality was 4.9%. In patients with a first ECG diagnostic of STEMI 75% met the door-to-balloon target of <90 min and 74% meet the CTB <150 min target. Of patients admitted by the Northern Ireland Ambulance Service only 39% were brought directly to the catheterisation laboratory, 34% were brought to the A&E department in the pPCI center and 27% were brought to a non-pPCI A&E requiring a further transfer. The CTB target was met respectively in 97, 50 and 25%.
Conclusion: A 24/7 pPCI service can be achieved with low mortality. Admission through any A&E department adversely effects ability to meet the CTB target.

16. Impact of Renal Insufficiency on Bleeding Events in Patients Undergoing Percutaneous Coronary Intervention

[#]*Margey R, *Maree AO,* [†]*Selzer F, *Adams B, *Patel N,* [‡]*Jneid H,* [†]*Marroquin OC,* [†]*Mulukutla SR,* [§]*Laskey WK, *Jacobs AK*

[#]Massachusetts General Hospital and Harvard Medical School, Boston, MA, *Boston University School of Medicine, Boston Medical Center, Boston, MA, [†]Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA, [‡]Michael E. DeBakey VA Medical Center and Baylor College of Medicine, Houston, TX, [§]University of New Mexico School of Medicine, Albuquerque, NM

Background: Access site hematoma requiring blood transfusion predicts mortality in patients undergoing PCI. Patients with renal insufficiency undergoing PCI have increased risk of adverse cardiovascular events. However, little is known about the relationship between degrees of renal insufficiency and bleeding in patients undergoing PCI.
Methods: This was a prospective, multi-center, cohort study of consecutive patients undergoing PCI during three NHLBI Dynamic Registry recruitment waves (2001–2006). In-hospital major and minor bleeding events and access site bleeding requiring transfusion were determined based on estimated glomerular filtration rate (eGFR). eGFR was calculated using the MDRD equation (required serum creatinine, age, race, gender). Statistical analysis comprised Kruskal–Wallis test, Chi-square and Cochran–Mantel–Haenszel test for trend and multivariable logistic regression.
Results: Bleeding events and access site bleeding requiring transfusion were significantly associated with renal insufficiency. Patients with renal insufficiency were more commonly female ($p < 0.0001$) and less likely to receive peri- and post-procedural anticoagulation and antiplatelet therapy. Among patients who survived to hospital discharge, those that bled or required transfusion were significantly less likely to be discharged on a thienopyridine (95.4 vs. 89.9; $p < 0.001$ and 95.3 vs. 87.9; $p = 0.005$) but not aspirin (96.3 vs. 96.2; $p = 0.97$ and 96.3 vs. 93.6; $p = 0.29$).
Conclusions: (1) Renal insufficiency predicts in-hospital bleeding events in patients undergoing PCI; (2) even moderate levels of impairment are associated with increased bleeding risk after adjustment for all other measured variables; (3) patients undergoing PCI who bleed are significantly more likely to have their clopidogrel discontinued prior to discharge. Whether renal insufficiency imparts added risk of mortality in patients who bleed and require blood transfusion requires further study.

Table Bleeding and transfusion requirement by degrees of renal insufficiency

Glomerular Filtration Rate. (ml/min/1.73m2)	Event Rate (%)	Adjusted Odds Ratio	95% CI	p-value
Bleeding*				
<45 (n = 661)	4.8	1.49	0.94–2.37	0.09
45–59 (n = 1,023)	5.1	1.58	1.06–2.36	0.03
60–74 (n = 1,544)	2.8	1.05	0.70–1.57	0.80
≥75 (n = 2,822)	2.7	1.00	Reference	n/a
Access site transfusion*				
<45 (n = 661)	2.7	2.67	1.29–5.52	0.008
45–59 (n = 1,023)	1.5	1.41	0.67–2.99	0.37
60–74 (n = 1,544)	1.1	1.50	0.74–3.04	0.26
≥75 (n = 2,822)	0.6	1.00	Reference	n/a

Event rate comparisons (overall and trend): *$p < 0.001$

The models were adjusted for the following factors: *Bleeding:* age, sex, prior PCI, reason for revascularization, lesion complexity, cancer, procedural GP IIb/IIIa, procedural LMW heparin, post-PCI GP IIb/IIIa and post-PCI heparin. *Transfusions*: age, sex, race, lesion containing thrombus, no. of attempted lesions, ad-hoc PCI, attempted total occlusion, cancer, procedural LMW heparin, procedural bivalirudin, and post-PCI heparin.

17. On-site Percutaneous Coronary Intervention (PCI) at Altnagelvin Area Hospital has led to a Significant Reduction in Time to PCI in Patients Presenting with NSTEMI and Meets the ESC

Monaghan M, Small C, Hutchinson C, Armstrong E, Smart P, Hughes S, Purvis J, McNeill A, McGlinchey P, Moore M

Altnagelvin Area Hospital, Londonderry

Background: The European Society of Cardiology (ESC) published guidelines in 2010 on the management of patients presenting with non-ST elevation MI (NSTEMI). They recommend that coronary angiography and revascularisation should be performed during the same hospital stay and preferably within 72 h of admission [1]. A dedicated on-site PCI service was introduced in the Western Health and Social Care Trust at Altnagelvin Area Hospital in February 2010 with emergency cardiac surgery support provided by the Belfast Trust. Altnagelvin Hospital is a large District General Hospital and had been performing on-site diagnostic cardiac catheterisation for 9 years. Prior to 2010, patients diagnosed with NSTEMI requiring PCI were transferred to Belfast.
Aims: The aim of this pilot study was to investigate if introduction of an on-site PCI service (1) is safe, (2) decreases time spent in hospital, (3) reduces time to revascularisation as recommended by the ESC.
Results: A retrospective study was made comparing length of hospital stay and time to revascularisation between a randomly selected cohort

of patients (n = 23) who presented with NSTEMI in 2009 prior to introduction off on-site PCI and patients (n = 45) who presented post on-site PCI in 2010. The results are tabulated (Table 1). A significant reduction in time to PCI from 7.54 days (±5.46) to 2.1 days (±1.4) p = 0.009 was shown with a concomitant reduction in hospital stay from 5.71 (±1.98) to 4.29 (2.62) p = 0.1. Survival to discharge and 90 days was 100%.

Conclusion: The establishment of on-site PCI is safe and has significantly increased the proportion of patients receiving coronary artery revascularisation within the target 72 h recommended by the ESC.

Table 1

	Pre on-site PCI	Post on-site PCI	p value
Patients (n)	23	45	
Age (years) ± SD	61 ± 11	62 ± 13	
Male, n (%)	15 (65%)	40 (89%)	
Diabetes, n (%)	3 (13%)	7 (16%)	
Smoking Hx, n (%)	16 (70%)	24 (53%)	
HTN (n)	8 (35%)	20 (44%)	
Chol >5 on admission, n (%)	8 (35%)	12 (27%)	
Clinical heart failure, n (%)	1 (4.3%)	0	
EF >30%, n (%)	17 (77%)	36 (100%)	
Dynamic ECG changes, n (%)	11 (48%)	24 (53%)	
LOS (nights) ± SD [excluding inpatient CABG (n = 2)]	8.73 ± 10.28 (5.71 ± 1.98)	4.29 ± 2.62	0.05260.1
Time to catheterisation (days) ± SD	3.22 ± 2.79	2.16 ± 1.20	0.0934
PCI performed, n (%)	11 (48%)	28 (62%)	
Referred for CABG, n (%)	3 (13%)	2 (4%)	
Referred for medical management, n (%)	9 (40%)	15 (33%)	
Days to PCI ± SD	7.54 ± 5.46	2.1 ± 1.4	0.0090
DES, n (%)	7/11 (64%)	19/28 (68%)	
Radial access, n (%)	7/11 (64%)	15/45 (33%)	
Alive to discharge, n (%)	22 (96%)	45 (100%)	
Alive at 90 days, n (%)	22 (96%)	45 (100%)	

Reference: 1. Guidelines on myocardial revascularization. The Task Force on Myocardial Revascularisation of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS). Eur Heart J. (2010);31:2501–5.

18. Croi MyAction: First Results from an Innovative Community-Based Vascular Prevention Programme in Galway

[1,2]Flaherty G, [1]Gibson I, [1]Walsh AM, [1]Kerins C, [4]Connolly S, [1,3]Crowley J

[1]Croi, West of Ireland Cardiac Foundation, [2]National University of Galway, Ireland, [3]University Hospital Galway, [4]Imperial College Healthcare NHS Trust, London

Purpose: To investigate the impact of a community-based vascular prevention programme (Croi MyAction) on medical and lifestyle risk factors in patients at high risk of cardiovascular disease (CVD).

Methods: Patients (heart SCORE ≥5%, Type 2 diabetes, peripheral arterial disease) and their partners were invited to attend the 16-week programme delivered by a multidisciplinary team (nurse, dietician, physical activity specialist) in a community setting. Smoking and dietary habits, physical activity levels, waist circumference and BMI, and medical risk factors (blood pressure and lipids) were measured at the initial assessment (IA) and at end of programme (EOP).

Results: Data on those who attended both IA and EOP were analysed (Table 1). The mean age of patients was 55.1 years and the retention rate on the programme was 89.7%.

Table 1 Summary of outcomes for patients and partners

	Patie-nts initial	Patients EOP	Partners initial	Partners EOP
Mean (SD) BMI (kg/m^2)	32.8 (6.7)	31.4 (6.5) p < 0.001	29.7 (5.5)	28.6 (5.1) p < 0.001
Mean (SD) waist circumference (cm)				
Men	115.9 (15.0)	110.3 (14.6)p < 0.001	113.2	108.2 p < 0.001
Women	106.4 (15.7)	101.5 (16.1)p < 0.001	96.5	92.5 p < 0.001
Mean (SD) Mediterranean Score (max 14)	4.1 (2.2)	8.4 (2.4) p < 0.001	4.3 (2.1)	8.6 (2.4) p < 0.001
% Achieving physical activity targets (≥5×/ week ≥ 30 min)	9.3	63.2 p < 0.001	19.4	61.2 p < 0.001
% Smoking	12.6	6.5 p < 0.001	8.8	8.8 p = 1.00
% Blood pressure <140/ 90 mmHg for high risk individuals and <130/ 80 mmHg for coronary/ diabetes	52.1	77.6 p < 0.001	77.9	88.4 p = 0.05
% Lipids (TC < 5 mmol/l and LDL < 3 mmol/l)	32.1	69.5 p < 0.001	38.5	55.2 p < 0.001
% HbA1c < 6.5 mmol/l (n = 37)	21.4	46.4 p = 0.04		

Conclusions: This study demonstrates that the MyAction vascular prevention programme is acceptable to patients, with high adherence rates and substantial improvements in both lifestyle and medical risk factors for CVD.

19. Associations Between Findings on a Cardiac Risk Assessment Questionnaire and Group 2 ECG Abnormalities: Results from the West of Ireland Screening for Sudden Cardiac Death in Young People Study

Joyce E, Devenney D, Gargoum F, Nolan P, McGorrigan C, Crowley J, Nash P, Daly K

Galway University Hospital, Galway

Introduction: Young people who participate in sport may have an increased risk of sudden cardiac death (SCD). In Ireland, cardiac risk

assessment using a questionnaire-based approach has been suggested. We aimed to describe the association between findings on questionnaire and presence of "Group 2" ECG abnormalities, proposed as markers of possible underlying cardiac pathology.
Methods: This was a prospective cross-sectional observational study. A six-item questionnaire was developed. The population surveyed consisted of young people aged 14–34 regularly engaged in sports of at least moderate dynamic intensity. All participants had a physical examination and a 12 lead ECG. Presence of Group 2 abnormalities (T wave inversion, ST segment depression or pathological Q waves in two or more leads; right/left axis deviation; right/left bundle branch block; left atrial enlargement; right ventricular hypertrophy; prolonged/shortened QT interval; atrial/ventricular arrhythmias; delta or epsilon waves; short PR interval or Brugada pattern) were noted.
Results: Between March and June 2009, 461 participants (70.7% male, median age 19, 92% at least one high dynamic sport) completed risk assessment. A "yes" answer to one or more questions ("positive questionnaire") occurred in 38.6%; the majority (87.1%) concerned symptom related questions. Group 2 changes were noted in 28%. These participants were not more likely to have provided a positive versus a negative questionnaire (41.1 vs. 59%, $p = 0.497$). No association occurred between these abnormalities and presence of symptoms including syncope or a family history of premature SCD. However personal history of a cardiac condition was independently associated with a Group 2 ECG abnormality (OR 2.37, $p = 0.029$).
Conclusions: While over a third of participants returned positive questionnaires only the question relating to personal history of cardiac disease was associated with Group 2 ECG changes. Meanwhile, high levels of these abnormalities were encountered in our screening population, calling into question their use as surrogate markers of possible cardiac pathology.

20. Non-Compliant Balloons for Final Kissing Inflation in Coronary Bifurcation Lesions Treated with Provisional T-Stenting: a Pilot Study

Mylotte D, Hovasse T, Ziani A, Lefevre T, Dumonteil N, Louvard Y, Carrie D

Institut Cardiovasculaire Paris Sud, France

Objectives: To assess the procedural and long-term results of non-compliant (NC) kissing balloon inflation (KBI) in patients undergoing bifurcation intervention with the provisional side branch (SB) stenting technique.
Background: Provisional SB stenting is the default strategy for coronary bifurcation intervention. Recent data have suggested that KBI with compliant balloons increases the risk of SB dissection and restenosis. However, NC KBI may reduce SB complications.
Method: We prospectively enrolled patients undergoing provisional SB stenting at two French centres. KBI was systematically performed with NC balloons. Quantitative coronary angiography and digital stent enhancement (DSE) were performed in all cases. Thirty-day and 1-year major adverse cardiac event (MACE) rates were assessed.
Results: We recruited 100 patients with a mean age of 67.3 ± 11.7 years. Diabetes mellitus was prevalent in 23%, renal dysfunction in 21%, and multivessel disease in 69%. Intervention was performed for stable angina in 48% and acute coronary syndromes in 27%. Target lesions were the left main in 15% and the left anterior descending in 51%. The majority of lesions (46%) were true-bifurcation stenoses (medina class: 1,1,1/1,0,1/0,1,1). All lesions were successfully treated with NC KBI. SB stenting was required in 6% (5 dissections, 1 residual stenosis). Using DSE, a SB stent scaffold was evident in 89% following KBI. The cumulative 12-month MACE rate was 4%. Target lesion revascularization was required in 3%. No stent thrombosis occurred during follow-up.
Conclusions: Provisional SB stenting followed by NC KBI is associated with high procedural success and low rates of clinical target lesion failure.

Session 5 Structural Heart Disease

Oral Presentations

21. Efficacy and Safety of Transcatheter Aortic Valve Implantation: Northern Ireland Experience

Manoharan G, Spence MS, Kodoth V, Maguire C, Anderson L, Doherty R, Smith B, Glover P, Manoharan GB, Tomlin A, McKenna-Maynard M, McAllister P, Gracey H, Dixon L, Johnston N

Royal Victoria Hospital, Grosvenor Road, Belfast

Introduction: Transcatheter aortic valve implantation (TAVI) is increasingly being advocated for treating surgically inoperable or high risk patients with severe symptomatic aortic stenosis. We started our TAVI programme in February 2008 and report our findings using the Medtronic CoreValve system in Northern Ireland.
Methods and Results: All patients who met the clinically and technical criteria (annulus ranging from 19.5 to 27 mm; vascular access $\geq$6 mm in diameter) were discussed and approved for the procedure at a joint multidisciplinary meeting. Unless a patient required a cut-down for vascular access, all cases were performed under local anaesthesia and without sedation. All patients were managed immediately post-procedure in the Coronary Care Unit.
A total of 85 patients (average age: 83 years old; average logistic Euroscore: 25) were planned for TAVI to date. Procedural success was 98% (1 procedural related mortality and the valve was not delivered in 1 patient due to access difficulty), with 91.8% performed under local anaesthesia. Percutaneous versus access cutdown (subclavian or femoral artery) were 91.8 and 8.2%, respectively. TAVI was performed for failing native aortic valve in 94.1% and bioprosthetic valve (valve-in-valve) in 5.9% of patients. The 30-day, 6-month and 1-year all cause mortality were 4.7, 7 and 11.6%, respectively. Minor vascular access complication (by VARC definition) was 2.4% (major = 0%). Clinical stroke was observed in X2 patients and gut ischaemia presumed embolic event was observed in one patient: all were in atrial fibrillation and were either unable to be prescribed warfarin or had it stopped for another procedure.
Conclusions: In carefully pre-selected patients, TAVI performed by a dedicated team is safe and efficacious. Performing the procedure under local anaesthesia has merits. Pre-existence of untreated atrial fibrillation correlates with increased risk of embolic events.

22. Initial Experience of a Mini Sternotomy Incision in Aortic Valve Replacement

Beattie GW, Nzewi OC

Department of Cardiothoracic Surgery, Royal Victoria Hospital, Belfast

Objective: In the past decade the quest to decrease the morbidity from cardiothoracic surgery has led to the development of approaches that avoids complete sternotomy incision. Utilising a mini sternotomy gives good exposure to the ascending aorta. In some units this is the standard approach to aortic valve surgery. Benefits include reduced blood loss, lower post operative pain, a shorter time to extubation and reduction in pulmonary complications. We present our experience over 18 months.

Methods: Data was retrieved from the national cardiac surgery database and hospital records. A mini sternotomy is defined as an upper midline incision of 5–7 cm, a sternotomy through the upper sternum with extension through the third or fourth interspace laterally.
Results: 24 patients, 52% were female, a mean age 69 years (42–82). Significant co-morbidities included diabetes (24%), COPD/asthma (14%), previous CVA/TIA (14%), 29% of patients are grossly obese and the mean logistic Euroscore was 7.19. There were no mortalities or wound infections. One patient with pulmonary fibrosis was reintubated and ventilated on the second postoperative day for 6 days. Biological valves were used in 76% of patients. The mean cardiopulmonary bypass time was 127 min (SD 43) and cross clamp time 87 min (SD 24). Patients were ventilated on average 6 h (1–15) post op and 29% received a blood transfusion. Median post operative stay was 9 days (5–50). Two patients had a conversion to a full sternotomy for bleeding.
Conclusions: Mini-sternotomy incision for aortic valve replacement is safe and should be considered as a standard approach.

23. Atrial Septostomy for Severe Pulmonary Arterial Hypertension: Evolving Percutaneous Approaches

Roy AK, McCullagh B, Gulam M, Nashat H, Adamali H, Gaine SP, Walsh KP

Mater Misericordiae University Hospital, Dublin

Introduction: Atrial septostomy (AS) is often a palliative intervention for patients with severe, refractory pulmonary arterial hypertension (PAH), as it provides decompression of the failing right ventricle, while also improving systemic cardiac output. Early use of AS has been associated with improved survival. Successful outcomes using graded balloon dilatation have been limited by high closure rates and the need for recurrent procedures. We present a single centre experience with novel approaches to AS, using either radiofrequency perforation (RFP), cutting balloon dilatation, or insertion of butterfly stents.
Methods: From 2005 to 2010, seven ($n = 7$) adult patients underwent AS with transoesophageal echocardiography or ICE guidance. Transeptal access was obtained using either RFP, or standard Brockenbrough needle technique. Cardiac haemodynamics were measured throughout the procedure, with systemic oxygen saturation targets of $\leq$10% decrease. Clinical follow-up was carried out via the National Pulmonary Hypertension Unit. Three different techniques were employed: (1) cutting balloon AS, (2) RFP of the interatrial septum, or (3) butterfly stent insertion using a Cordis PG2910XD 10×29 mm stent with a preloaded 2.0 prolene suture to create a narrowed stent waist upon deployment.
Results: The mean age was 55.1 years, with 42.9% (3/7) female and mean (SD) pulmonary artery pressure 85.0 ± 23.2 mmHg. All patients were NYHA IIIB-IV. AS method was RFP ($n = 3/7$), Cutting Balloon ($n = 3/7$), and Butterfly stent one. There were no (0%) procedural mortalities. The mean (SD) decrease of peripheral oxygen saturations post-procedure was 7.29 ± 2.4%. In long term follow-up, the mean survival was 2.8 years post AS, while five patients remain alive (range from 1 to 7.3 years).
Conclusion: In a highly selected PAH cohort, AS is well tolerated, and improves outcomes in addition to maximal medical therapy. Use of the novel butterfly stent technique with ICE guidance may offer a longer lasting AS alternative, and could be considered in PH patients at an earlier stage in their disease, before irreversible right heart failure and remodeling occurs.

24. Early Experience with the Watchman Left Atrial Appendage Occluder Device

Neylon MA, Alqaseer M, Asgedom S, Morgan R, McAdam B, Sheahan R, Foley D

Beaumont Hospital, Beaumont, Dublin

Atrial fibrillation is the most common cardiac arrhythmia and carries with it the devastating complication of stroke. The left atrial appendage (LAA) has been identified as the source of thrombi in over 90% of patients with non-valvular atrial fibrillation. Percutaneous occlusion of the LAA with the Watchman device has been proven non-inferior to warfarin therapy. We present our initial experience with the Watchman device. We performed a prospective, observational single centre study in which LAA occlusion was performed in 35 patients between October 2009 and April 2011. Follow-up was performed by means of transoesophageal echo, case notes review and telephonic interview. 34 patients underwent successful device placement. The procedure was performed via the right femoral vein; using a 14 French dedicated delivery catheter; under conscious sedation with fentanyl and midazolam. Devices were sized according to maximal diameter and length of the LAA measured in four TOE planes, to reach 20% compression post implantation. Mean procedure time was 1 h. 78% of patients were male with a mean age of 73 (range 63–85 years). The indications for device placement are shown in Table 1. Average CHADS2 score was 2.7 (2–5). The anticoagulation strategy for at least 6 weeks post implantation was either full warfarinization for those already on warfarin (2), dabigatran 110 mg bd (19), 150 mg bd (8) or 75 mg bd (1). 4 patients who experienced significant bleeding on warfarin were prescribed dual antiplatelet therapy post implant. 95% of patients were discharged the same day. There were no major adverse cardiac or cerebrovascular complications associated with device implantation. 1 patient required repeat hospitalisation 2 days after implant with a large groin haematoma. 1 patient has transient arrhythmia that settled on medical treatment and there were no cases of pericardial effusion. During follow-up TOE, four patients were noted to have echodense material attached to the device—considered to represent thrombus and thus were put on 150 mg bid dabigatran for a further 4–6 weeks with TOE thereafter. There were no clinical neurological events in these patients in follow up and all resolved on follow up TOE. For all patients during follow-up ranging from 2 to 18 months no ischemic strokes or embolic events have occurred. Early single centre experience with percutaneous LAA occlusion with the Watchman device shows that the procedure is feasible and safe in experienced hands. No cerebral events have been observed thus far but early phase anticoagulation appears important. TOE is central to patient selection, per procedural guidance of device implantation and early follow up.

Table 1

Bleeding	19
Falls	2
Haematological condition	2
Patient preference	5
Ethanol Excess	1

25. 25 years of Adult ECMO in Ireland: The History, Development and Results of the Service from 1985 to 2010

Regan R

Department of Perfusion Prof. Eoin O'Malley National Centre for Cardiothoracic Surgery, Mater Misericordiae University Hospital, Dublin

Extracorporeal Life Support (ECLS) is a term used to describe prolonged but temporary support (usually 1–30 days) of heart and/or lung function using mechanical devices. Two forms of ECLS are Extra Corporeal Membrane Oxygenation (ECMO) and short-term Mechanical Circulatory Support (MCS). ECMO provides support for patients with reversible respiratory dysfunction using veno-venous ECMO (VV ECMO) and support for cardio/respiratory dysfunction using veno-arterial ECMO (VA ECMO). It is indicated for pre-operative stabilisation, investigation, resuscitation, post-operative support, as a bridge to transplantation or for cardiogenic shock that is refractory to conventional therapies. The first utilisation of ECMO was on the first heart transplant performed in this country in 1985 on post-op day 74, following acute rejection. In these early pioneering days of transplantation the use of ECMO was only reserved as a "last ditch" effort to try and salvage life. Since 1985 the Mater Misericordiae University Hospital (MMUH) has supported 41 patients, 13 female and 27 male with an age profile of 16–65 years. Of these, 37 received ECMO support and 4 received short-term MCS support. All 37 ECMO patients were supported using VA ECMO for post-operative fulminant cardiac failure and a combination of VV-VA ECMO for respiratory support. Exactly half of all VA ECMO cases (12 patients) were for post-transplant support with the remaining caseload (50%) a mix of post-cardiotomy surgeries. A variety of mechanical devices were used for ECMO support that will be described, in addition to the latest current technology for ECMO now being used in our institution. The survival rate for all VA ECMO patients in the MMUH is 30%. In 2009, following the A (H1N1) pandemic, the formal development of an adult respiratory ECMO programme began with the establishment of an ECMO director to lead the new development. To date 13 patients have been supported with ECMO for respiratory failure with a cumulative run time of 432 days and with the longest successful VV support duration being 60 days with an overall survival rate of 69%.

26. Actual Versus Predicted Post Ventricular Assist Device Outcomes in A Mixed Device Group: a Retrospective Study From The National Cardiac Transplant Centre

Joyce E, Doherty M, Buckley U, Anwar A, Ni Dhonnchu T, Kinsella A, Healy D, Wood AE, Nolke L, McCarthy J, Mahon N

Mater Misericordiae University Hospital, Eccles Street, Dublin

Introduction: Ventricular assist device (VAD) therapy has a growing role in the management of advanced heart failure. Preoperative scoring systems including the Lietz score and the Right Ventricular Failure Risk Score (RVFRS) have been validated for older pulsatile flow devices. Our aim was to evaluate concordance between predicted and actual outcomes in patients receiving either pulsatile (Thoratec paracorporeal:PVAD) or newer axial flow devices (Heartmate II).
Methods: All patients with a left ventricular assist device (LVAD) or biventricular assist device (BiVAD) were retrospectively included. Lietz and RVFRS scores, incorporating markers of nutrition and of renal, liver, bone marrow and right ventricular dysfunction were recorded. Patients were divided into risk categories reflecting probability of in-hospital and 1-year mortality (Lietz score) or right ventricular failure and 1-year mortality (RVFRS). Endpoints were survival to discharge on VAD therapy or cardiac transplantation or occurrence of one or more major complication (stroke, sepsis, major bleeding, device complication, acute renal failure).
Results: 15 patients (mean age 41.9, 73.3% non-ischemic, 86.7% bridge-to-transplant) underwent VAD placement (9 PVAD and 6 Heartmate II) between April 2005 and January 2011. 73.3% were alive to discharge or transplant. Three of the four deaths occurred in the paracorporeal device group—Lietz score predicted high/very high risk in all 3. Of ten patients (7 PVAD vs. 3 Heartmate II) who experienced at least one major complication, Lietz score predicted at least medium risk in six. Among Heartmate II recipients, Lietz score suggested high risk in one and medium in three. Only 1 of the 12 LVAD patients with a low RVFRS score developed RV failure.
Conclusions: RVFRS had an excellent negative predictive accuracy for RV failure in our population. Survival in Heartmate II recipients was good, even when Lietz score indicated increased risk, suggesting this type of device be preferred when the risk of RV failure is low.

Session 6: Imaging/Heart Failure

Oral Presentations

27. The Early Role of CMR in the Assessment of Cardiomyopathy

Barrett M, Waterhouse DF, Morgan RB, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R

Cardiac MRI Unit, Blackrock Clinic, Blackrock, Co. Dublin

Introduction: Investigation and risk stratification of suspected or confirmed cardiomyopathy traditionally involves correlation between electrocardiographic, echocardiographic and angiographic findings in an appropriate clinical setting. Cardiac magnetic resonance (CMR) is the new gold standard in assessment of cardiac structure, function and perfusion, provided in a single study. Aetiology and prognostic factors may be investigated concurrently.
Methods: This was a single centre, 12-month experience of patients referred for assessment of presumptive cardiomyopathy.
Results: 224 patients (145 male, 79 female) underwent CMR assessment of cardiomyopathy. 177 (79%) were outpatient referrals. Prior to CMR, 97 patients (43.3%) had a transthoracic echocardiogram. 43 (19.2%) had an angiogram, 35 (15.6%) had an abnormal holter monitor and 64 (28.6%) had ECG changes. The primary indications for CMR included: 59 (26.3%)—arrhythmia; 37 (16.5%)—cardiac symptoms with normal coronaries; 32 (14.3%)—screening for family history of CM/SCD; 19 (8.5%)— follow-up of previously diagnosed CM. CMR provided sufficient information to confirm or outrule cardiomyopathy in 68.2% of cases. A new diagnosis of cardiomyopathy was made in 39.9%. CMR also had an important role in ongoing assessment of patients with established diagnosis of cardiomyopathy, with 31.6% having their previous diagnosis outruled and 47.4% being recommended for device implantation as a direct result of CMR findings. Overall in cardiomyopathy assessment, CMR had an impact on management in 50.2% of patients, with a therapeutic consequence on 36.3%, including medication changes in 26.9%.
Conclusion: Patients at all stages of the clinical spectrum of cardiomyopathy, from initial presentation to institution of therapy and long-term follow up may benefit from CMR.

28. Cardiac MRI Findings in Hypertrophic Cardiomyopathy: a Northern Ireland Population

[1]Lyons K, [2]Dixon L, [2]Johnston N, [3]Horan P

[1]Belfast City Hospital, [2]Royal Victoria Hospital, [3]Antrim Area Hospital

Cardiac magnetic resonance imaging (CMR) is increasingly used in the diagnosis and risk stratification of hypertrophic cardiomyopathy (HCM) providing additional anatomical and functional information. It also identifies myocardial fibrosis using delayed gadolinium enhancement (DGE) which is an independent adverse prognostic factor for sudden cardiac death (SCD) [1]. We retrospectively analysed all CMRs diagnostic of HCM during 2010, evaluating demographic features, LV mass, resting LVOT gradient and prevalence of systolic anterior motion (SAM) of the mitral valve and myocardial fibrosis. 62 patients had CMR findings consistent with HCM. 42 (67.7%) patients were male and mean age was 55.7 years. 25 males and 11 females had indexed LV mass above the normal range. Mean LV ejection fraction was 69.3%. 16 (25.8%) patients had SAM and 11 (17.7%) had elevated resting LVOT gradients, all with associated asymmetric septal hypertrophy. Hypertrophy was predominantly asymmetric in 50 (80.6%) apical in 9 (14.5%) and concentric in 3 (4.9%) patients. 61 patients received contrast and 41 (67%) had significant DGE. There was no significant difference in prevalence of DGE based on gender ($p = 0.079$) or patient age ($p = 0.34$). DGE was more common in apical (88.9%) compared with septal hypertrophy (67.3%). Indexed LV mass was greater in the DGE group [mean 85.4 g (SD 20.1) vs. mean 77.4 g (SD 19.4)]; this was not statistically significant ($p = 0.15$). LV ejection fraction was lower in the DGE group [mean 68.1% (SD 6.6) vs. mean 71.5% (SD 6.9)] but again this difference was not statistically significant ($p = 0.07$). CMR findings in patients with HCM in Northern Ireland are similar to those reported in Europe and the USA [2]; the majority have asymmetric septal hypertrophy and a significant proportion have DGE, an increasingly recognised predictor of SCD. Further studies in this population will determine the link between DGE and other traditional risk factors for SCD.

Reference

O'Hanlon R, Grasson A, Roughton M et al. Prognostic significance of myocardial fibrosis in hypertrophic cardiomyopathy. J Am Coll Cardiol. 2010;56:867–74.

29. Atrial and Ventricular Functional Changes on Echocardiography in Newly Diagnosed Untreated Hereditary Haemochromatosis

Almuntaser I, King G, Norris S, Daly C, Ellis E, Murphy R

Departments of Cardiology and Hepatology, St James's Hospital, Dublin

Background and Objectives: Hereditary haemochromatosis (HH) may be associated with infiltrative cardiomyopathy and atrial arrhythmias. Doppler echocardiogram derived left atrial parameters including the left atrial ejection force (LAEF) were used to evaluate left atrial (LA) systolic function. The relationship between this LAEF and left ventricular (LV) function was investigated.

Methods: Fourteen subjects with newly diagnosed untreated HH (mean age 46.92 ± 2.6) and 14 age and gender matched control subjects (mean age 40.23 ± 3.2) were recruited and underwent echocardiography with comprehensive systolic and diastolic functional evaluation. Left and right ventricular (LV and RV) myocardial strain (MS) was measured. The LV and right ventricular (RV) myocardial performance indexes (MPI), the transit time of the left atrial pressure wave A-Ar interval were measured. Left atrial ejection force, defined as $1/3 \times$ mitral valve area (MVA) $\times A^2$ (where A is the atrial flow velocity of transmitral Doppler).

Results: In subjects with HH, LAEF was lower ($136.27 \pm 7.4\%$) than control ($202.9 \pm 7.4\%$, $P < 0.001$). The peak isovolumic acceleration recorded at the free wall of LV and RV was lower in the HH compared to controls ($P > 0.0001$). The LV and RV MS, A-Ar, and tissue Doppler (TD) E′ were reduced in HH subjects compared to controls ($P > 0.001$). Moreover, the MPI of LV and RV was greater in HH subjects than controls ($P < 0.01$). Significant correlation was observed between LAEF and A-Ar, TD E′, TD Sm systolic velocity, and LV MPI ($r = 0.92, 0.89, 0.71, -0.71$ and $P < 0.0001$, respectively). In a stepwise regression model, TD E′ ($P = 0.006$), emerged as the only independent determinant of LAEF ($R^2 = 0.86$, $P < 0.0001$).

Conclusion: Left atrial ejection force is a novel non-invasive parameter of LA systolic function and demonstrates the close interplay between LA and LV function in subjects with HH. The additive clinical value of assessing LA systolic function needs further study.

30. Is There a Mortality Risk Associated with Aspirin use in Heart Failure? Results from a Large Community Based Cohort

[1,2]Bermingham M, [1]Shanahan MK, [1]Miwa S, [1]Dawkins I, [1]O'Hanlon R, [1,2]McDonald K, [1,2]Ledwidge M

[1]Heart Failure Unit, St Vincent's University Hospital, [2]School of Medicine and Medical Science, University College Dublin

Background: The use of aspirin therapy in heart failure (HF) is controversial. There is contradictory evidence on the impact of aspirin on attenuation of ACE inhibitor benefits and several studies have suggested an adverse impact on morbidity in this setting. This retrospective study evaluated the association of aspirin therapy with mortality in a HF cohort with long-term follow-up.

Methods: This is a retrospective cohort study of patients attending a HF Disease Management Programme. Chart review confirmed aspirin prescription, dose and duration of use. The primary endpoint was the association with mortality of aspirin compared to no aspirin over long-term follow-up using unadjusted and adjusted Cox-proportional hazards modelling with Kaplan–Meier survival curves.

Results: Data were available for 1,278 patients. Mean population age was 70.2 ± 12.3 years, 64% of patients were male and mean follow-up time was 3.1 ± 2.5 years. Aspirin was used by 769 (60.2%) patients and 607 of these (78.9%) used aspirin for their entire follow-up. The average aspirin dose was 89.5 ± 53.4 mg. Aspirin users were older than non aspirin users, had greater rates of coronary artery disease, myocardial infarction, angina, dyslipidaemia (all $p < 0.001$), diabetes mellitus ($p = 0.01$), hypertension ($p = 0.03$), a lower rate of atrial fibrillation ($p < 0.001$) and had higher lnBNP ($p = 0.001$). Aspirin users were more likely to be prescribed statins and less likely to be prescribed warfarin (both $p < 0.001$). In the total population, 440 (34.4%) patients died over the follow-up period. In unadjusted analysis there was no difference in mortality between aspirin users and non-users (33.2 vs. 36.3%, $p = 0.241$). However, when fully adjusted for age, sex, comorbidities, other medications and BNP, aspirin use showed a 30.3% survival benefit compared to no aspirin use in this community HF population (HR 0.697, 95% CI 0.507–0.958, $p = 0.027$).

Conclusion: This retrospective evaluation of low-dose aspirin therapy in HF patients with long term follow-up shows an association with mortality benefit when adjusted for key population differences including BNP. Randomised, prospective studies are required to clarify the role of aspirin therapy in HF.

31. Detection of High Sensitivity TNT Using Fourth Generation Immunoassay in Pulmonary Hypertension Patients Identifies a Subgroup with More Advanced Disease

Roy AK, McCullagh B, McGorrian C, Russell C, Fitzgibbon M, Murray PT, Gaine SP

Mater Misericordiae Hospital, Dublin

Purpose: Circulating cardiac troponin T (TNT) is a marker for subendocardial ischaemia and alteration of structural proteins in the myocardium. Using a third generation Roche assay, cardiac TNT is an independent marker of increased mortality in chronic pulmonary arterial hypertension (PAH) patients. We examine the association between the new fourth generation Roche assay for high sensitivity TNT (hsTNT) and markers of disease state in PAH.
Methods: The study population consisted of 104 patients with chronic stable PH (WHO ClassII and III). High sensitivity TnT (hsTNT) was measured in patients' serum, using Roche Elecsys electrochemiluminescence immunoassay (ECLIA), with a detection limit of 3 ng/L, and 99th percentile upper reference limit of 14 ng/L ("positive" hsTNT). Clinical and laboratory parameters, including 6 min-walk test (6MWT), cardiac hemodynamic (mPAP, PVR), serum Neutrophil Gelatinase-Associated Lipocalin (NGAL), BNP (ELISA, Bachem) and Troponin I (ARCHITECT, Abbott) were also measured, and compared by hsTNT status using the Student's *t* test and the Mann–Whitney *U* test.
Results: The etiology of PH was (i) PAH associated with connective tissue disease (38.5%) (ii) idiopathic PAH (34.6%) and (iii) chronic thromboembolic PH (Not PAH) (24.3%). Positive hsTNT was detected in 31.7% of PAH patients. Positive hsTNT was significantly associated with older age, reduced distance on 6MWT, and increased serum NGAL (Table 1). In a linear regression model, hsTNT levels were positively correlated with 6MWT ($r = -0.54$, $p < 0.001$).
Conclusion: Chronic PH patients with detectable hsTNT >99th percentile have clinical parameters suggestive of more advanced disease. Routine assessment of hsTNT in the outpatient setting may contribute to therapeutic goal setting in PH. It remains to be determined whether hsTNT changes in conjunction with favourable treatment responses.

Table 1 Comparison of clinical features by high-sensitivity troponin T level in chronic pulmonary hypertension patients

	hsTNT negative (n = 71)	hsTNT positive (n = 33)	Test statistic	p value
Age (years): mean (SD)	51.9 (15.4)	64.3 (12.1)	t = −4.0	<0.001
NGAL (ng/mL): median (IQR)*	193 (89)	226 (157)	z = −2.6	0.01
6MWT in metres: mean (SD)	399.5 (137.4)	337.4 (14.2)	t = 5.11	<0.001
Pulmonary artery pressure (mmHg): mean (SD)	45.9 (14.1)	47.7 (18.4)	t = −0.4	0.73
Pulmonary vascular resistance (Wood units): median (IQR)	5.5 (6.7)	4.6 (8.8)	z = 0.027	0.97
BNP (pg/mL): median (IQR)	79 (187)	279 (277)	z = −1.95	0.051

* IQR Interquartile Range

32. Does Right Ventricular Function Alone Predict Outcomes After CRT? An Analysis of the MADIT-CRT Population

Campbell P, Takeuchi M, l Bourgoun M, Foster E, Brown MW, Moss AJ, Pfeffer MA, Solomon SD

Brigham and Women's Hospital, Boston, Mass. USA

Background: Right ventricular (RV) dysfunction is associated with worse outcomes after CRT. We have shown that patients in the MADIT-CRT trial with the best RV function after 1 year demonstrated the lowest subsequent event rates. However, we sought to determine if this was related to improvement in LV function.
Methods: 1,820 patients were randomly assigned to CRT plus ICD (CRT-D) or ICD only in a 3:2 ratio. We assessed RV function as right ventricular fractional area change (RVFAC) by echocardiography. RVFAC at baseline (n = 1,511) and 1 year (n = 1,273) was assessed, and change in RVFAC calculated (n = 1,126).
Results: Patients were divided into groups above and below the median of achieved RVFAC and LVEF at 1 year and a landmark analysis was performed to assess subsequent event rates. Those with the worst RV and LV function at 1 year had the highest event rates, while those with the best biventricular function had the lowest event rates (primary event rate 16.9 vs. 6% per year). Every 5% absolute increase in RVFAC from baseline was associated with a 20% reduction in risk of subsequent primary outcome (HR 0.8; 95% CI 0.66, 0.97; p = 0.019). However when adjusted for change in LVEF over the same period, RV function was no longer an independent predictor of outcome (HR 0.93; 95% CI 0.75, 1.15; p = 0.513).
Conclusions: Patients with the best biventricular function at 1 year have the lowest subsequent event rates. Improvement in RV function as a predictor of outcome was not independent of improvement in LV function, suggesting that RV improvement occurs as a consequence of improvement in LV function.

Poster Presentations

33. Comparison of Traditional and Novel Definitions of Acute Kidney Injury for the Prediction of Outcomes in Acute De-Compensated Heart Failure

Roy AK, McGorrian C, Nashat H, Tracey C, Kavanaugh E, Brennan A, Maksudova N, Mahon NG, Murray PT

Mater Misericordiae University Hospital, Dublin

Acute Kidney Injury (AKI) has a major impact on prognosis in acute decompensated heart failure (ADHF). Several definitions of AKI have recently been proposed, with little or no validation in ADHF. This study compares the ability of worsening renal function (WRF) with several novel AKI definitions (the kidney disease: improving global outcomes (KDIGO), RIFLE, and AKIN classifications) to detect and stage AKI, and to predict major clinical outcomes at 30 days and 1 year.
Methods: Analysis was performed on prospective data collected from 811 patients with ADHF admissions with 30-day, and 1-year event (composite of death, HF readmission, and dialysis) follow-up. The incidence, stages, and outcomes of AKI were determined using four definitions (KDIGO, RIFLE, AKIN, and WRF; see Table), and compared using ROC analysis.
Results: Complete data was available for N = 646 patients, with mean age 64.6 ± 14.4 years, and 70.6% male. AKI by any definition

occurred in 39.9% (258). AKI was associated with increased incidence of the primary outcome at 30-days (31.4 vs. 6.4%, $\chi^2 = 70.3$ and $p < 0.001$) and 1-year (65.5 vs. 29.1%, $\chi^2 = 83.4$ and $p < 0.001$).There was a stepwise increase in the incidence of the 30-day and 1-year primary outcomes with increasing AKI stages using any criteria ($p < 0.001$). In direct comparison, KDIGO showed better predictive ability than WRF for the 30-day- (AUC 0.75 vs. 0.72, $\chi^2 = 5.6$; $p = 0.02$) and 1-year primary outcome (AUC 0.67 vs. 0.65, $\chi 2 = 4.8$; $p = 0.03$). RIFLE also had superior predictive ability for the 30-day outcome (see Table 1).

Conclusion: AKI cases identified by the KDIGO and RIFLE systems are associated with more adverse outcomes at 30-days, when compared to WRF- or AKIN-defined cases. The KDIGO and RIFLE criteria show better AUC for prediction of adverse outcomes, suggesting that clinically meaningful changes in serum creatinine during admission for ADHF may be better identified using these newer diagnostic criteria for AKI.

Table 1 Comparison of AKI definitions in ADHF

	Minimum diagnostic criteria for AKI	Incidence of AKI, *n* (%).	AUC[a] for 30-day outcomes (CI)[b]	Sensitivity for 30-day outcomes, % (CI)	Specificity for 30-day outcomes, % (CI)	AUC 1-year outcomes (CI)
KDIGO (2010)	≥0.3 mg/dl change Scr over 48 h or increase Scr × 1.5-fold over 7 days	235 (36.3%)	0.74 (0.69–0.79)	71.7 (62.1–80.0)	70.6 (66.5–74.4)	0.66 (0.63–0.70)
RIFLE (2007)	Incr Scr × 1.5-fold over 1–7 days, sustained for >24 h	162 (25.0%)	0.76 (0.71–0.81)	64.2 (54.3–73.2)	82.6 (79.1–85.7)	0.64 (0.60–0.68)
AKIN (2007)	≥0.3 mg/dl change Scr or incr. × 1.5-fold over <48 h	177 (27.3%)	0.71 (0.66–0.77)	59.4 (49.5–68.9)	78.9 (75.2–82.3)	0.64 (0.61–0.68)
WRF (2000)	≥0.3 mg/dl change Scr during admission	211 (32.7%)	0.72 (0.67–0.77)	69.8 (60.1–78.4)	74.6 (70.7–78.3)	0.65 (0.62–0.69)

Scr serum creatinine

[a] Area under the receiver operating curve

[b] 95% confidence interval

34. Biological Variability of Bioelectrical Impedance Testing in a Cardiac Inpatient Setting

Mak G, Murtagh G, O'Connell R, Dawkins I, O'Hanlon R, Ledwidge M, McDonald K

St. Vincent's University Hospital, Dublin

Purpose: Bioelectrical impedance is a relatively new modality used to noninvasively measure fluid accumulation in the setting of heart failure. The variability of measurements in bioelectrical impedance analysis has yet to be described extensively in literature. This study aims to describe the biological variability of bioimpedance readings in an inpatient setting.

Methods: The study has been approved by the local ethics committee and is currently being conducted at St Vincent's University Hospital, Dublin. It is intended to recruit 100 inpatients with either heart failure or acute coronary syndrome. The data currently presented are taken from an interim analysis of the study. After informed consent, total body impedance readings [which includes hydration (H), resistance (Rz) and reactance (Xc)] were measured from the right dorsal wrist and ipsilateral ankle of the patient (carried out by investigator 1). A repeat measurement was taken 5 min later on both the right and left side of the body by the same investigator. A second investigator would subsequently repeat the measurement 5 min later from the right side of the body. Data analysis was performed using SPSS (Version 13).

Results: To date, 40 patients have been recruited, 26 were male and the mean age was 67.8 ± 11.7 years. Eighteen patients (45%) had a history of heart failure. Interobserver variabilities (i.e. the variability of measurements from two different investigators) were 1.0 ± 1.7, 5.0 ± 4.6 and 9.0 ± 15.9% for H, Rz and Xc, respectively. Intraobserver variabilities (i.e. the variability of measurements from one investigator) for H, Rz and Xc were 0.8 ± 1.5, 2.3 ± 3.4 and 7.5 ± 12.2%, respectively. The intrapositional variabilities (i.e. the variability of measurements taken from either the left and right side of the body) of H, Rz and Xc were 1.4 ± 2.5, 6.0 ± 5.7 and 9.9 ± 9.3%, respectively.

Conclusion: Bioelectrical impedance demonstrates little interobserver, intraobserver and intrapositional variability and may be a reliable and consistent measure of fluid overload in a heart failure setting.

35. Screening for Asymptomatic Left Ventricular Dysfunction Using B-Type Natriuretic Peptide: Effect of Left Ventricular Diastolic Dysfunction on Results: a Report from the STOP-HF Study

Murtagh G, Dawkins IR, Ledwidge MT, Tallon E, O' Hanlon R, McDonald KM

St Vincent's University Hospital, Heart Failure Unit, Dublin

Purpose: BNP has been subject to concerns regarding false positive rates when used as a screening tool for asymptomatic left ventricular dysfunction. Left atrial volume index (LAVI) is elevated in patients with left ventricular diastolic dysfunction (LVDD). It is increasingly being recognised that LVDD is associated with similar rates of morbidity and mortality. We sought to determine whether LVDD was responsible for abnormalities in BNP readings leading to "false" positive BNP results.

Methods: The STOP-HF project involves a population of high cardiovascular risk patients who underwent electrocardiography, echocardiography and BNP sampling. For this study, 827 patients were analysed. We selected those patients with an ejection fraction of ≥50%, but a BNP of (a) over 50 pg/mL, and (b) over 100 pg/mL, and analysed the LAVI in both groups to determine if indices for LVDD were present in this population.

Results: There were 191 patients with EF ≥50% and BNP over 50 pg/mL (group a). This would correspond to a false positive rate of 23% for a BNP cutoff level of 50 pg/mL. However 98 of these patients (51.3%) had a LAVI >32 mL/m^2. 77 of 827 patients analysed had a BNP level of over 100 pg/mL but an EF ≥50%, giving a false positive rate of 9%. Of these, 54 (70.1%) had a LAVI >32 mL/m^2. Hence, if we regard LV dysfunction as meaning either LVSD or LVDD, 11% of patients were in fact false positives at a cutoff of 100 pg/mL, and only 3% at a cutoff of 50 pg/mL.

Conclusion: A significant proportion of patients with normal left ventricular systolic function, but elevated BNP levels, display evidence of LVDD as indicated by a LAVI >32 mL/m^2.

36. B-Type Natriuretic Peptide Response with Peak Exercise and Symptom Reproduction in Determining Heart Failure Diagnosis in a New Diagnostic Heart Failure Clinic: Interim Analysis

Voon KJ, Murtagh G, Badabhagni M, Patle A, Ledwidge MT, O'Hanlon R, McDonald KM

St. Vincent's University Hospital, Dublin

Purpose: The diagnosis of heart failure (HF) can be challenging. Symptoms may be non-specific, examination unremarkable and B-type natriuretic peptide (BNP) levels may be inconclusive. In such circumstances, the presence of structural/functional abnormality on Doppler-echocardiography may indicate, but does not confirm HF. We sought to examine the role of BNP response to peak exercise in the evaluation of HF diagnosis in this uncertain group.

Methods: We have embarked on a prospective randomized study to assess BNP response to exercise in 90 patients with proven HF ($n = 30$), non-HF ($n = 30$) and a group of patients with indeterminate presentation (diagnosis of HF unclear, $n = 30$) as determined by two heart failure cardiologists. Patients with suspected HF referred to our dedicated new diagnostic HF clinic undergo clinical assessment, ECG, resting BNP and echocardiography. A modified walk test is performed until peak exercise at minimum BORG 3 dyspnoea. BNP levels and Doppler-echocardiography was obtained in each patient using standard techniques at baseline, peak-exercise and 30 min post-exercise. Results were expressed as mean ± SD.

Results: In this ongoing study, we have to date assessed 36 patients (age 75 ± 6.7 years, male 56%). Results show a change in pre- and peak-exercise BNP levels in HF versus non-HF of 72.7 ± 101.5 versus 7.1 ± 4.7 pg/mL. HF patients also demonstrated an increase in lateral wall E/E′ compared with non-HF group (0.5 ± 3.2 vs. − 2.2 ± 1.3). Four of eight indeterminate patients have demonstrated a pattern similar to HF patients.

Conclusion: As expected, the initial experience in this ongoing study has demonstrated a different trend in exercise-induced changes in BNP and E/E′ between HF and non-HF patients. Within the indeterminate group, two distinct patterns are developing which may help provide a more precise diagnosis to this group.

37. Undertreatment of Asymptomatic Left Ventricular Dysfunction: a Report from the STOP-HF Study

Murtagh G, Dawkins IR, Ledwidge MT, Tallon E, O' Hanlon R, McDonald KM

St Vincent's University Hospital, Heart Failure Unit, Dublin

Purpose: Although several potential screening tools for heart failure have been discredited owing to suboptimal diagnostic performance, it has also been hypothesised that those with ALVSD are already on effective preventative treatment, thereby minimising the impact of a formal screening programme. The purpose of this report was to determine what percentage of patients shown to have ALVSD were prescribed therapies known to protect against progressive ventricular dysfunction at the time of diagnosis.

Methods: The STOP-HF program presently involves 1,400 high cardiovascular risk individuals with risk factors for heart failure who were screened for ALVSD by electrocardiography, B-type natriuretic peptide (BNP) sampling and Doppler-echocardiography performed. We analysed the patient demographics among those with an left ventricular ejection fraction (EF) of <40%, and <50%, and determined what medication had been prescribed.

Results: Of the 991 patients studied to date, 52 (5%) had an EF <50% with a mean age of 65 years. Forty-one of these (79%) were male). More pronounced LVSD, as demonstrated by an EF <40%, was found in 15 of the total population of 991 subjects (2%). Analysis of medication use demonstrated that ACEI/ARB was not being prescribed in 32% of patients with a LVEF <50 and 34% in those with a LVEF <40%. The majority of patients receiving these agents were not on clinical trial doses. Beta blockers were not prescribed in 52% of patients with LVEF <50%, and 60% of those with LVEF <40%.

Conclusion: It is clear that there is significant undertreatment and underdosing of this group in terms of therapies shown to protect ventricular function. This observation underlines the need to screen for this group.

38. The Benefits of the Use of Chronic Phosphodiesterase 5 Inhibitors (PDE5) in Patients with Heart Failure with Reduced Ejection Fraction and Secondary Pulmonary Hypertension: a Single Center Study

Al Qaseer M, Raleigh C, Egan S, Brendan McAdam

Beaumont Hospital, Beaumont, Dublin

Background: Despite the substantial pre-clinical evidence that verifies the benefit of PDE5 inhibition in the management of heart failure, there are only limited short-term trials that have been conducted which confirm those results in the human trials.

Methods: This is retrospective observational study from the supportive heart failure unit in Beaumont Hospital, Ireland. We looked at a cohort of patients with heart failure and reduced ejection fraction (caused by different etiologies) with secondary pulmonary hypertension that have refractory heart failure despite optimal medical therapy, requiring more than three admissions in the previous year with heart failure and are in NYHA class III to IV who have been started on Sildenafil. Patients were followed up for a mean of 6 months. The following parameters were assessed: freedom from hospitalization, improvement in NYHA status, reduction in diuretic use, change of renal parameters, and tolerability of the drug.

Results: 16 patients were treated with Sildenafil. All of the patients had HFrEF with secondary pulmonary hypertension. 10 were female. Average age of the patients was 72. 7 had ischemic cardiomyopathy, 7 had valvular cardiomyopathy, and 2 had dilated cardiomyopathy. All of the patients were in NYHA class IV prior to starting on sildanefil. They had, on average, 4 hospitalizations with heart failure in the previous year. Within 6 months of starting the therapy, 10 patients improved by 1 NYHA class, and 4 improved by 2 NYHA classes. There was no significant improvement of renal parameters, but 71% of patients had down-titration of their diuretic intake due to symptom improvement. Of note, 2 of the 16 patients were on outpatient milrinone infusions and 1 patient did not tolerate the drug therapy, which was stopped subsequently.

Conclusion: We observed that the chronic use of Sildenafil in patients with HFrEF and secondary pulmonary hypertension and refractory heart failure has improved NYHA status, freedom from rehospitalization, and a reduction in diuretic use with good tolerability and minimal adverse events. There was no improvement in the renal function.

39. The Use of Ivabradine in Eligible Heart Failure Population

Khider W, Boles O

Our Lady of Lourdes Hospital, Drogheda, Co. Louth.

The recently published SHIFT Trial has demonstrated the benefits of Ivabradine (a novel heart rate lowering agent acting by selectively inhibiting the If ion current in the SA node) in reducing death and hospital admissions in symptomatic systolic heart failure population.
Method: We conducted an audit study in our Heart Failure Unit to identify those patients who could be eligible to receive Ivabradine therapy based on the SHIFT Trial selection criteria. We defined those eligible for Ivabradine therapy as any patient who has symptomatic systolic heart failure NYHA class II–VI, EF $\leq$35%, in sinus rhythm with a heart rate (HR) of 70 bpm or higher, and on maximal tolerable dose of B-blockers.
Results: The retrospective data of 45 patients attended the Unit were analysed. The mean age was 66 years. 27 (60%) patients had NYHA class II–VI. 29 (64.4%) patients had EF $\leq$35%. The mean B-blocker dose was 5.4 mg with 14 (31.1%) patients fully optimized, 27 (60%) partially optimized and 4 (8.9%) not on B-blockers. There were 38 (84.4%) patients with sinus rhythm and 7 (15.6%) with atrial fibrillation. Among the sinus group there were 24 (54%) patients with HR $<$60 bpm, 11 (29%) with HR 60–69 bpm and 3 (8.6%) with HR $\geq$70 bpm. Only one patient among the three in the latter group with HR $\geq$70 bpm was eligible to receive Ivabradine as the other two patients had NHYA class I and EF of 45%, respectively.
Conclusion: The Audit shown that a small proportion of optimised stable heart failure population are eligible for Ivabradine therapy. Nevertheless the study recommends the addition of Ivabradine treatment for eligible patients. We also suggests using 24 h Holter monitor to measure the mean HR in those with HR 60–69 bpm who might be eligible for the therapy if the mean HR is 70 bpm or greater. Re-auditing with the above recommendations is required.

40. Cost Effectiveness of Adding CMR to Evaluation of Suspected Coronary Ischaemia

Waterhouse DF, Barrett M, Morgan RB, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R

Cardiac MRI Unit, Blackrock Clinic, Blackrock, Co., Dublin

Introduction: Patient selection for coronary angiography traditionally relies on clinical assessment, treadmill exercise testing (TMET) and transthoracic echocardiography (TTE). Cardiac magnetic resonance (CMR) is a relatively novel imaging study which provides excellent non-invasive assessment of myocardial perfusion and is useful in risk stratification of patients with suspected coronary artery disease (CAD).
Aims: To estimate the cost and diagnostic implications of using CMR alone instead of conventional TTE/TMET work-up to guide patient selection for angiography. Healthcare costs were derived from VHI's hospital billing system.
Results: 83 patients (64 male, 19 female) with suspected CAD underwent CMR. 15.4% had ischaemic features on TMET and 47% had evidence of territorial ischaemia on TTE. On CMR evaluation, 38.6% of these were found to have definite CAD. Interestingly, 18% of patients had significant CAD on CMR despite no evidence of ischaemia on TMET and TTE and would not have undergone angiography based on conventional assessment. In 16 cases (19.3%), planned angiography based on abnormal TTE/TMET was avoided by CMR which excluded a diagnosis of CAD. Furthermore, non-ischaemic causes of cardiac symptoms were discovered on 8.4% of CMR which were undetected on conventional workup. The use of CMR as first line investigation in assessment of suspected coronary ischaemia would have avoided TMET in 31.3%, TTE in 98.7% and angiography in 25.3%. This would represent a total saving of €18,722, or €226 per patient.
Conclusions: This study demonstrated that a CMR—only approach is the most cost-effective diagnostic strategy for evaluation of CAD. CMR imaging allows accurate selection of patients for invasive management, avoiding unnecessary procedures. CMR was as useful as angiography in guiding revascularisation and is superior to TMET/TTE in detecting ischaemia.

41. B-Type Natriuretic Peptide Association with Persistent Non-Dipping Nocturnal Blood Pressure in Patients with Hypertension and Diabetes After 1 year-Early Markers of Diabetic

Voon KJ, Phelan D, Watson CJ, Bhutta U, Elrasheed O, Murphy N, O'Hanlon R, Ledwidge MT, Ledwidge MT, O'Shea D, McDonald KM

St Vincent's University Hospital, Elm Park, Dublin

Purpose: Heart failure (HF) is commonly preceded by risk factors like hypertension (HTN), diabetes (DM) and left ventricular (LV) remodeling. Nocturnal non-dipping blood pressure ("Non-dipping") identified by 24-h ambulatory blood pressure monitoring (ABPM) has been shown to confer additional risk of progressive LV dysfunction and remodeling. The study aims to define the natural history of non-dipping in a cohort of patients with HTN and DM over 1 year follow-up.
Methods: This is a prospective analysis with a mean follow-up of 1.2 ± 0.3 years on 107 patients (age 59.7 ± 10.5 years, male 66%, diabetes 51%, eGFR 114.1 ± 38.5 ml/min/1.73 m^2, LVEF 67 ± 8%) to determine the association between non-dipping status, B-type natriuretic peptide (BNP) and echocardiographic parameters of LV dysfunction in patients with HTN and DM.
Results: Persistent non-dipping patients ($n = 19$) had significantly higher BNP (median [interquartile] compared to all other patients ($n = 88$) at baseline (T0) (26.4 [9.9, 77.4] vs. 9.9 [5.1, 26.8] pg/mL, $p = 0.001$) and follow-up (T1) (32.7 [9.4, 70.9] vs. 12.1 [6.1, 29.3] pg/mL, $p = 0.03$), respectively. This is despite improvement in daytime blood pressures and left ventricular mass indexes in all patients with conventional blood pressure management. Elevated BNP in persistent non-dipping patients was evident in patients with HTN and DM, but not with HTN alone and was associated with worsening left atrial volume indexes (LAVi) from T0 to T1 (28.6 ± 9.8, 30.6 ± 10.6 ml/m^2).
Conclusion: Plasma BNP elevation is associated with persistent non-dipping status over 1 year in patients with HTN and DM. It is linked to increased LAVi, a surrogate for early diastolic dysfunction, and may reflect an active fibro-inflammatory pathology not resolved by conventional blood pressure lowering strategies. More work is needed to understand the causes of persistent non-dipping and elevated BNP in this patient population.

42. Establishing a Cardiac MRI Programme in Ireland: 1-year Experience

Waterhouse DF, Barrett M, Morgan RB, Molloy E, Sheahan R, McAdam B, Gumbrielle T, Foley D, O'Hanlon R

MRI Department, Blackrock Clinic, Blackrock, Co. Dublin

Introduction: Cardiovascular magnetic resonance (CMR) has been established as the gold standard imaging modality for cardiac diseases. CMR provides exceptional quality images of cardiac and major vessel anatomy, and allows a robust assessment of a diverse spectrum of pathology, in addition to functional and physiological parameters.
Objectives: During this initial 1-year experience, we sought to establish an Irish registry of CMR and to evaluate indications, referral pattern and impact on patient management.
Methods: This was a single centre registry with consecutive enrolment of patients over a 12-month period.
Results: 521 patients were enrolled. Indications included myocarditis/cardiomyopathies (45.2%), risk stratification in suspected coronary artery disease/ischemia (24.1%), as well as assessment of viability (11%). Severe complications occurred in 1.3%, and were all associated with stress testing. CMR had a significant impact on management in 60.2% of patients, including importantly, in 32.2% of cases the final diagnosis based on CMR was different from the diagnosis before CMR, leading to a complete change in management. In more than 76% of cases, CMR was capable of satisfying all imaging needs so that no further imaging was required. CMR had therapeutic implications for 39.6% including both indicating (12.3%) and avoiding (15.6%) PCI, indication for surgery (7.7%), device indication as a consequence of CMR (2.1%) and medication change (22.1%).
Conclusions: This initial experience demonstrates the important clinical impact of CMR on both confirming diagnosis and guiding appropriate patient management. Within Ireland, the current primary limitations to routine clinical application of CMR are hardware availability, clinical acceptance, and physician education. As these limitations are overcome, the use of CMR will greatly expand. Indeed, given the diagnostic, and clinical implications, CMR may become the modality of choice for cardiac imaging.

43. Coronary Calcium is More Effective than Diamond Forrester for Cardiology Resource Utilisation at RACPC

McKavanagh P, Donnelly PM, Ball P, Harbinson M, Trinick T, Lusk L, Doyle P

Ulster Hospital, Dundonald, Belfast

Introduction: Recently revised NICE guidelines for the investigation of suspected coronary artery disease (CAD) have suggested the use of modified Diamond Forrester (DF) criteria to rationalise the use of cardiac imaging resource. It is envisaged that this tool will assist in the management decisions of patients and reduce unnecessary second and third line investigations. We compared the use of the Diamond Forrester likelihood criteria with a coronary artery calcium (CAC) assessment for the refinement of CAD likelihood.
Methods: This is a preliminary analysis of consecutive patients that were recruited as part of the CAPP study. The CAPP study is a randomised control trial which will assess the use of cardiac CT against current standard of care for symptomatic patients that attend rapid access chest pain clinics (RACPC). The project is supported by the Southeastern trust research and development office and the Northern Ireland Cardiac Research Network. Ethical approval was obtained from the Northern Ireland Research Ethics Committee. Prospective demographic information such as age, gender, type of chest pain and traditional risk factors was collected at RACPC and entered into a Diamond Forrester likelihood table. Patients with likelihood <10% were considered low risk and did not require further investigation, 11–89% moderate risk further cardiac non-invasive cardiac imaging required, >90% high risk and cardiac catheterisation required. A non-contrast enhanced CAC was performed on a 64 multidetector CT platform. CAC scan parameters were tube voltage 120 kV, tube current 165 mA, and 3 mm reconstruction increment. CAC was assessed using a semi-automated analysis package to determine the total Agatston score. CAC score <10 was considered low risk no further investigation required, 11–399 moderate risk non-invasive cardiac imaging required, >400 high risk, cardiac catheterisation required.
Results: 78 patients were assessed. 38 Female, 40 male. Mean age 59 (SD 9.61). The mean DF likelihood of disease was 59 (SD 29). The mean CAC was 186. The median female CAC was 0 (range 0–1,738) in the median male CAC was 20 (range 0–2,885). 73% of patients would have required further non-invasive imaging tests and 13% would have required an invasive angiogram based on DF criteria. When CAC was used as gatekeeper for further investigation, 28% would have required non-invasive cardiac imaging and 13% would have required an invasive angiogram. 20% of those considered to require invasive angiography by DF criteria would not have received it and 14% of those considered for non-invasive testing would have been considered for invasive angiography when CAC criteria was applied.
Conclusions: The prediction of coronary artery disease burden and cardiovascular risk remains an imperfect science. Total CAC scores are strongly associated with total atherosclerotic plaque burden, with correlation coefficients >0.90 [1]. This pilot study suggests that CAC may prove more effective at rationalisation of healthcare resource than DF criteria for patients with suspected CAD.
Reference

1. Budoff MJ, Achenbach S, Blumenthal RS, et al. Assessment of coronary artery disease by cardiac computed tomography: a scientific statement from the American Heart Association Committee on Cardiovascular Imaging and Intervention. Circulation. 2006;114:1761–1791

44. Increase in Isovolumic Acceleration (IVA) of the Right Ventricular (RV) Free Wall but No Difference in NT-proBNP Between Endurance Athletes with Athlete's Heart and Healthy Untrained Controls at Rest

McLoughlin B, Flynn I, Clarke J, King G

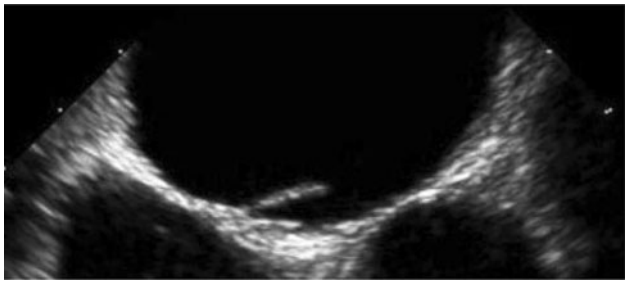
Eagle Lodge Cardiology, Limerick

Background: It is unclear if the exercise associated increase in RV end diastolic wall stress in healthy athletes represents a clinically significant risk for RV insult or is apart of the physiological response to endurance exercise.
Methods: 18 male elite athletes were compared to a similarly aged group of 17 male controls. IVA was measured at the lateral corner of the tricuspid annulus. RV diameter, RV wall thickness, and pulmonary pressure (PAP) were also measured. Independent *t* tests were used to compare RV diameter, RV thickness, and PA pressures. A non-parametric Mann–Whitney *U* test was used to compare IVA between the two groups. A p value of <0.05 was considered significant. NT-proBNP was measured by an electrochemiluminescence assay.
Results: In the Elite athlete, the mean RV diameter was 34.0 (SD 6.77) compared to 22.5 (SD 6.92) in the control group ($p < 0.0001$). The mean RV wall thickness for athletes was 0.422 (SD 0.10) and for controls was 0.359 (SD 0.11) ($p < 0.063$). The mean resting PAP was 23.29 mmHg (SD 6.04) in the Athletes and in the control group 21.12 mmHg (SD 4.4). The mean IVA in the athletes was 2.02 M/s (SD 0.60) compared to 1.48 M/s (SD 0.30) in the controls ($p = 0.002$). LV myocardial compliance improved. There was no difference in NT-proBNP values between endurance athletes and untrained control subjects ($p = 0.56$).
Conclusions: This study showed a significant increase in IVA of the RV in the athletes despite normal levels in NT-proBNP**.** The increase in IVA therefore is not a compensatory response to a cardiac insult but represents a part of the physiological response to endurance exercise.

45. Atrial Septal Pouches: Can they be Identified on Transoesophageal Echocardiogram?

O'Flynn AM, Moore DP

The Adelaide and Meath Hospital Incorporating the National Children's Hospital (AMNCH), Tallaght, Dublin



Purpose: The presence of atrial pouches in pathological specimens has recently been described. This has generated theories regarding the process of fusion of the septum primum and secundum. It has been postulated that a left atrial pouch may be a potential source of systemic embolism. We carried out a retrospective review of 100 transoesophageal echocardiograms to assess if the presence of atrial pouches as recently described could be established.
Methods: All patients who undergo transoesophageal echocardiography at our centre to assess for potential cardiac source of embolism receive an agitated saline contrast injection as protocol. This increases the detection rate for patent foramen ovale (PFO). As part of this protocol a detailed examination of the interatrial septum is also carried out. We selected 100 consecutive transoesophageal echocardiograms with the main indication being assessment for cardiac source of embolism. We reviewed the studies in detail paying particular attention to the interatrial septum.
Results: Left atrial pouches were identified in 27 of the 100 cases reviewed. A PFO was identified in 28 of the cases and a right atrial pouch was identified in 13 cases. It was deemed that 31 of the cases had complete fusion of the septum primum and secundum.
Conclusions: Based on our observations atrial pouches are readily identifiable on transoesophageal echocardiogram. The frequency of left atrial pouches was lower while that of right atrial pouches was higher than recently described. However this was a retrospective review. Atrial septal pouches are an interesting anatomical entity and future prospective studies should focus on their detection, and attempt to draw conclusions regarding their potential as a source of embolism.

46. Cardiac CT in an Emergency Department Chest Pain Evaluation Unit in Ireland

[1]Kearns G, [1]Erwin J, [1]Keane D, [1]McCreery C, [1]McDonald K, [1]Quigley P, [1]Quinn M, [2]Dodd, J

[1]Department of Cardiology, St. Vincent's University Hospital, Elm Park, Dublin, [2]Department of Radiology, St. Vincent's University Hospital, Elm Park, Dublin

Purpose: To evaluate the outcomes of patients with low or intermediate clinical likelihood of acute coronary syndrome (ACS) who underwent a cardiac CT attending an emergency department 'Chest Pain Evaluation Unit' (CPEU) in Ireland.
Materials and Methods: From August 2008 through December 2009, 1,183 consecutive CPEU patients attended the emergency department at St. Vincent's University Hospital and were assessed by the Cardiology Advanced Nurse Practitioner (ANP). One-hundred and four patients with low-to-intermediate pre-test probability were deemed suitable for cardiac CT. Those patients with a negative cardiac CT were discharged and those patients with a positive cardiac CT (at least one obstructive coronary lesion) underwent invasive coronary angiography. Follow up phone calls were made at 1-year post cardiac CT to the patient's general practitioners (GPs) to determine the occurrence of major adverse coronary events (MACE).
Results: Thirty-three patients underwent cardiac CT while in the CPEU and 71 underwent cardiac CT as an outpatient. The mean time interval between admission to CPEU and cardiac CT was 15.4 h ($\pm$18.7) for inpatient scans and 28.8 days ($\pm$21.2) for outpatient scans. Of the 104 patients, 62 had normal coronary arteries on cardiac CT and 28 had non-obstructive coronary artery disease. Four patients did not attend for CT. None of these patients reported MACE at 1-year. Ten patients had at least one obstructive coronary lesion diagnosed on CT and subsequently underwent invasive coronary angiography. Six showed confirmed obstructive coronary disease; two of these were revascularized. Thus, cardiac CT had a sensitivity of 100%, specificity of 95.2%, positive predictive value of 60% and negative predictive value of 100% for obstructive coronary artery disease.

Session 7: Young Investigator's Award

Oral Presentations

47. Potent Long-term Cardioprotective Effects of Single Low Dose Insulin-like Growth Factor-1 (LD-IGF-1) Treatment Post Myocardial Infarction

O'Sullivan J F, Leblond AL, Kelly G, Kumar A HS, Metharom P, Büneker CK, Alizadeh-Vikali N, Hristova I, Hynes BG, O'Connor R, Caplice NM

Centre for Research in Vascular Biology, Biosciences Institute, UCC, Cork

Background: Insulin-like growth factor-1 (IGF-1) is recognized as an important regulator of cardiac structure and cardiomyocyte homeostasis. The pro-survival and anti-apoptotic effects of IGF-1 have been investigated in vitro and in rodent models of myocardial infarction (MI). However, the clinical application of IGF-1 has been hampered by dose dependent side effects both acutely and during chronic administration. We hypothesized that single, low dose IGF-1 (LD-IGF-1) administered locally and early in the reperfusion phase after acute MI in a large animal model would avoid significant side effects but would have pro-survival effects that would manifest in long-term structural and functional improvement post MI treatment.
Methods and Results: Forty-four female Landrace pigs underwent intracoronary administration of LD-IGF-1 or saline 2 h into the reperfusion phase of acute LAD occlusion MI. In the area of infarction, IGF-1 receptor and signaling responses were activated at 30 min, and cardiomyocyte cell death was attenuated at 24 h, post-LD-IGF-1, but not saline, treatment. Hemodynamic and structural studies using PV loop, CT and TTC analysis 2 months after MI confirmed marked reduction in infarct size, attenuation of wall thinning and augmentation of wall motion in the LD-IGF1 but not saline treated animals. These regional structural benefits were associated with global reductions in LV volumes and significant improvement in LV systolic and diastolic function.

Conclusions: One-time LD-IGF-1 effects potent acute myocardial salvage in a preclinical model of LAD occlusive MI extending to long-term benefits in myocardial infarct size, wall structure and function, underscoring its potential as an adjunctive therapeutic agent.

48. Waveform Optimisation for Internal Cardioversion of Atrial Fibrillation

[1]Kodoth V, [2]Castro NC, [1]Glover BM, [3]Anderson JM, [3]Escalona OJ, [1]Lau E, [1]Manoharan G

[1]The Heart Centre, Royal Victoria Hospital, Belfast, NI, [2]Department of Electronics, Universidad Simon Bolivar, Caracas, Venezuela, [3]Northern Ireland Bio-Engineering Centre, University of Ulster, Jordonstown, NI

Introduction: A novel atrial defibrillator was developed at the Royal Victoria Hospital in collaboration with Northern Ireland Bio-Engineering Centre (NIBEC), University of Ulster. This device is powered by an external pulse of radiofrequency (RF) energy and designed to cardiovert using low tilt monophasic (LTMW) and low tilt biphasic waveform (LTBW). This study compared the safety and efficacy of LTMW with LTBW for transvenous cardioversion of atrial fibrillation (AF).
Methods: Patients with persistent AF with previous history of failed external cardioversion were randomised to LTMW or LTBW. INR was maintained in between 2 and 3 for 4 weeks prior cardioversion. St Jude's defibrillating catheter was positioned in the distal coronary sinus and right atrium and connected to the defibrillator via a junction box. After dummy testing patient was cardioverted in a stepwise progression from 50 to 300 V. Shock success was defined as return of sinus rhythm for $\geq$30 s. If cardioversion was unsuccessful at peak voltage patient was crossed over to the other arm and cardioverted at peak voltage.
Results: Thirty patients (50%) were equally randomised to LTBW and LTMW. Seven out of 15 (46%) cardioverted to sinus rhythm with LTBW and 1/15 (6%) with LTMW ($p < 0.035$). Including crossover patient's 14 patients (46%) converted to sinus rhythm. After cross over four patients were cardioverted with LTBW and two with LTMW. Mean voltage, current, energy and intracardiac impedance used for cardioversion was 270.53 ± 35.96 V, 3.68 ± 0.80 A, 9.12 ± 3.73 J and 70.82 ± 13.46 Ohm. For patients who were successfully cardioverted mean voltage, current, energy and intracardiac impedance were 268.28 ± 42.41 V, 3.52 ± 0.63 A, 8.51 ± 3.16 J and 73.92 ± 12.01 Ohms. There were no major adverse complications during the procedure. Cardiac markers measured post cardioversion was unremarkable.
Conclusion: LTBW was more efficacious for low energy transvenous cardioversion of AF. Significant proportion of patients were successfully cardioverted to sinus rhythm with low energy. Radiofrequency powered defibrillator can be safely used for transvenous cardioversion of AF.

49. LRG: a Novel Biomarker of Ventricular Dysfunction and Heart Failure

**Watson C J, *†Ledwidge MT, *†Phelan D, *†Collier P, *Byrne JC, *Dunn MJ, *†§McDonald KM, *§Baugh JA*

*School of Medicine and Medical Science, St Vincent's University Hospital and The Conway Institute of Biomolecular and Biomedical Research, University College Dublin, †Heart Failure Unit, St Vincent's University Hospital Healthcare Group, Elm Park, Dublin, §Denotes equal author contributions

Purpose: Heart failure (HF) preventative strategies urgently require better biomarkers for optimal risk stratification. The current gold standard B-type natriuretic peptide (BNP) correlates with increased risk of cardiovascular events and is reflective of an active pathological process. However, BNP possesses numerous limitations, including wide biological variability. A search for biomarkers with improved performance characteristics requires application of more innovative methodologies.
Methods: To maximise cardiac specificity for biomarker identification, we obtained serum from the coronary sinus of asymptomatic patients with hypertension. Serum was pooled into two groups according to BNP levels. Using a novel proteomic methodology, we isolated differentially expressed proteins within the coronary sinus serum proteome and identified them by mass spectrometry. An extensive validation process at gene and protein level were carried out in various cohorts of patients across a wide spectrum of cardiac disease, extending from asymptomatic left ventricular diastolic dysfunction through to systolic HF.
Results: Leucine-rich α2-glycoprotein (LRG), a protein whose precise function is still unclear, was identified as being consistently overexpressed in high BNP serum. LRG levels correlated significantly with BNP ($P < 0.05$) yet were able to identify HF independent of BNP. Furthermore, LRG expression was detected in myocardial tissue and correlated with expression of fibrotic genes ($P < 0.001$). Importantly, increasing serum levels of LRG over time was associated with progressive left ventricular diastology.
Conclusion: We have identified LRG as a novel serum biomarker that can accurately identify patients with HF. Multivariable modelling confirmed that LRG is a stronger identifier of HF than BNP and this is independent of age, sex, renal function, medications, and BNP. Furthermore, unlike BNP, LRG was able to predict changes in left ventricular diastology over time highlighting a potential role for identification of sub-clinical disease progression in pre-HF syndromes.

50. Exercise Training Improves Activity and Psychosocial Wellbeing in Adolescents with Congenital Heart Disease (CHD)

[1]Morrison ML, [1]Sands AJ, [1,2]McCusker CG, [2]McKeown PP, [1]McMahon M, [1]Gordon J, [1]Craig BG, [1]Casey FA

[1]Department of Paediatric Cardiology, The Royal Belfast Hospital for Sick Children, Belfast, [2]The Queen's University of Belfast, Belfast

Ability to exercise is an important quality of life measure and indicator of physical health. Recently, exercise training has emerged as a method of improving activity and psychological health in some patient groups. Many patients with CHD are now adolescents; this time of personal development may be an ideal opportunity to introduce positive lifestyle changes. We aimed to ascertain if motivational techniques and a structured exercise program could increase activity and improve wellbeing. Patients aged 12–20 years were identified using the Northern Ireland regional database (HeartSuite). Participants completed standard psychological questionnaires and underwent evaluation of exercise ability (formal exercise stress testing and measurement of free-living activity using an ActiGraph accelerometer). Following randomisation the intervention group attended an activity day where they were given a personal exercise programme. The control group received their usual level of care. Patients were followed up at 6 months for reassessment and results obtained were analysed using parametric methods. One hundred and forty-three patients (mean age 15.6 years) consented to participate, 86 were male (60%) and 105 had major CHD (73%). Psychological health appeared well preserved at baseline with few differences between study groups. On formal exercise

testing, complex patients performed worse at peak exercise. However, patients with major CHD had significantly higher activity counts. 101 (71%) attended for reassessment. There was a significant increase in duration of exercise test [Pillai's Trace 5.34 (p 0.023)] and average activity counts per minute [Pillai's Trace 46.55 ($p < 0.001$)] for the intervention group at reassessment. The intervention group also had trends toward improved mood and self esteem. Exercise training significantly improves peak exercise capacity and free-living activity in this group. Increased activity also appears to have a positive effect on self-esteem and mood parameters. Future interventions targeted around this area may considerably improve outcomes for this population.

Session 8: Revascularisation

Oral Presentations

51. Duration of Balloon Inflation for Optimal Stent Deployment: 5 Seconds is Not Enough

Mylotte D, Hovasse T, Garot P, Salvatella N, Morice MC, Chevalier B, Pichard A, Lefèvre T

Institute Cardiovasculaire, Paris Sud

Aim: To assess the effect of the duration of stent inflation on stent expansion using digital stent enhancement (DSE).
Background: Optimal stent expansion and apposition to the vessel wall are of critical importance to optimize the results of percutaneous coronary intervention (PCI). However, it is not known if stent inflation duration impacts on stent expansion.
Methods: We performed a prospective cohort study in patients undergoing PCI. Quantitative coronary angiography and DSE data were analysed. DSE was performed at 5, 15 and 25 s during stent implantation, after target balloon inflation pressure was achieved.
Results: 104 consecutive patients (150 lesions) were enrolled. The mean age was 66.9 ± 11.1 years. Complex lesions (ACC/AHA B2/C) occurred in 26.9%. Stents used: Cypher Select (54.1%), Xience V (30.6%), and Taxus Liberté (15.3%). The minimal stent diameter increased significantly with the duration of stent inflation: 2.60 ± 0.51, 2.76 ± 0.51, 2.82 ± 0.52 mm at 5, 15 and 25 s ($p = 0.001$). Similarly, maximal stent diameter increased with the duration of stent inflation: 3.21 ± 0.51, 3.32 ± 0.52, and 3.36 ± 0.54 mm ($p = 0.05$). The average stent diameter also increased with longer stent inflation ($p = 0.021$). Using MUSIC criteria 24.0, 53.3, and 68.0% of stents were appropriately expanded at 5, 15 and 25 s ($p < 0.0001$).
Conclusions: The duration of stent balloon inflation has a significant impact on stent expansion. Stent deployment for >25 s is recommended.

52. Syntax Scoring in Multivessel Coronary Artery Disease: a Multidisciplinary Approach is Best

Hodkinson EC, Noad RL, Spence MS, Johnston PWJ

Cardiology Department, Royal Victoria Hospital, Belfast Trust, Belfast

Introduction: When determining the best revascularization strategy for a patient with left main +/− multivessel coronary disease, the European Society of Cardiology recommends a multidisciplinary 'Heart Team' approach [1]. A key part of this decision-making is the use of scoring systems to help standardise risk stratification. The SYNTAX Score (Synergy between PCI with TAXUS drug-eluting stents and Cardiac surgery) quantifies lesion complexity based on its angiographic appearance and places the patient in a 'risk tertile' (low = 0–22, Intermediate = 23–32, high = ≥33). The 3-year SYNTAX results showed no significant difference in MACCE rates between PCI and CABG in the lowest tertile. However, in the Intermediate and high risk groups MACCE were higher in the PCI group [2]. The SYNTAX Trialists recommend that scoring is best done by a panel of three, yet within the Cardialysis™ core scoring lab there is an inter-observer variability of ±9.1 [3]. This study assesses our Heart Team's Syntax scoring and the potential impact on revascularisation strategy chosen.
Methods: Five recent coronary angiograms were selected, and all cardiologists and cardiac surgeons in our department were invited to score the cases independently. The cases were also scored by a SYNTAX score Proctor.
Results: 18 doctors responded (six cardiologists, two surgeons, six cardiac registrars and four cardiothoracic registrars). In 35% of cases the individual scores differed in tertile allocation from the Proctor. This may have altered the revascularistion strategy chosen. In contrast the mean departmental scores were in agreement with the Proctor. Those cases in the lowest tertile produced the widest variations between scorers. Overall, our department's inter-observer scoring variability was lower than that of the Cardialysis corelab, at ±5.1.
Conclusions: If using SYNTAX score to assist Heart Team revascularisation decisions, we recommend that the scoring should be performed by at least two members of the Heart Team.
References

1. Wijns W et al. For The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS). Guidelines on myocardial revascularization. Eur Heart J. 2010;31:2501–55 http://www.escardio.org/guidelines-surveys/esc-guidelines/Pages/percutaneous-coronary-interventions.aspx.
2. As presented at the European Association for CardioThoracic Surgery (EACTS) Conference Sept 2010, Geneva. http://www.syntaxscore.com/index.php?option=com_content&view=frontpage&Itemid=44.
3. Serruys PW. The SYNTAX score: a new angiographic tool to grade the complexity of coronary artery disease. As presented at Transcather Therapies 2008.

53. Total but not Partial Discontinuation of Antiplatelet Therapy in ACS Presenters Predicts Poor Clinical Outcome

O'Connor S, Collet JP, Hattab M, Tanguy ML, Silvain J, Barthelemy O, Bellemain-Appaix A, Beygui1 F, Montalescot G

Institut de Cardiologie, INSERM CMR937, Pitié-Salpêtrière Hospital (AP-HP) 75013 Paris, France Université Pierre et Marie Curie, Paris, France

Background: Cessation of Antiplatelet Therapy (APT) is detrimental, especially after stent placement. The effect of partial cessation (one remaining APT drug) of dual antiplatelet therapy (DAPT) versus complete cessation (cessation of all APT drugs) of APT requires further clarification with respect to its prevalence in acute coronary syndrome (ACS) presenters and to its impact on short-term clinical outcome.

Aim: To evaluate the prevalence of complete versus partial interruption of APT in ACS presenters and to evaluate early recurrent events after admission for ACS with respect to prior pattern of chronic APT use. The primary endpoint was a composite of death, myocardial infarction and stent thrombosis occurring during the first month after admission for ACS. Safety outcome was a composite of TIMI major and minor bleeds.
Methods and Results: Of 3,514 ACS presenters recruited in the e-PARIS web-registry between 1999 and 2009, 2,528 were prior users of APT and n = 852 were APT-naïve patients. Prior users were at higher risk than naïve patients but presented less frequently with STEMI (42.26 vs. 23.12%, p = <0.0001). Among prior users, 133 (3.8%) patients interrupted APT of which 115 were complete (96 single APT and 19 DAPT) and 18 partial interruptions. The median time from interruption to ACS was 53.4 and 21.3 days for partial and complete interruption, respectively. The primary endpoint occurred in 363 patients including 268 deaths, 327 MIs and 39 stent thrombosis. Complete interruption was found to be an independent correlate of the primary composite endpoint (OR 1.712, 95% CI 1.04–2.81, p = 0.034) along with STEMI presentation, prior PCI, diabetes, age and impaired renal function. Independent correlates of bleeding events (TIMI major and minor) were prior APT treatment (OR 2.06, 95% CI 1.14–3.75, p = 0.016) along with female gender, STEMI presentation and age.
Conclusion: The pattern of chronic APT use remains an important marker of CV risk. Interruption of the last or only APT drug appears as a major risk factor for the occurrence of a major thrombotic coronary event.

54. Impact of Renal Insufficiency on Prescription of Discharge Medication and 1 year Outcomes After Percutaneous Coronary Intervention

*[#]Margey R, [†]Selzer F, *Quiroz R, [‡]Jneid H, [†]Marroquin OC, [†]Mulukutla SR, [§]Laskey WK, *Jacobs AK,*Maree AO*

[#]Massachusetts General Hospital, Harvard Medical School, Boston, MA, *Boston University School of Medicine, Boston Medical Center, Boston, MA, [†]Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA, [‡]Michael E. DeBakey VA Medical Center and Baylor College of Medicine, Houston, TX, [§]University of New Mexico School of Medicine, NM

Background: Degrees of renal insufficiency strongly predict death and cardiovascular events after percutaneous coronary intervention (PCI). However, little is known about how varying degrees of renal insufficiency impact the prescription of cardiovascular medication in PCI patients.
Aims: To determine if renal insufficiency influences prescription of recommended Class 1 medication at the time of hospital discharge. To establish if there is a relationship between degrees of renal insufficiency, failure to prescribe antiplatelet pharmacotherapy and outcome in patients who have undergone PCI.
Methods: This was a prospective, multi-center, cohort study of consecutive patients undergoing PCI during three NHLBI Dynamic Registry recruitment waves (2001–2006). Rates of prescription of statin, aspirin, thienopyridine, beta blocker, ACE inhibitor and Coumadin for discharged patients were correlated with degrees of renal insufficiency. Estimated glomerular filtration rate (eGFR) was calculated using the MDRD equation (required serum creatinine, age, race, gender). Major adverse cardiovascular events (MACE) consisted of death, myocardial infarction and repeat revascularization. Statistical analysis comprised Kruskal–Wallis test, Chi-square and Cochran-Mantel–Haenszel test for trend. One year event rates were calculated by Kaplan–Meier method.
Results: Patients with renal insufficiency who underwent PCI were less likely to be prescribed cardiovascular medication on discharge. The percentage of patients discharged on statins, antiplatelet therapy, beta blockers and ACE inhibitors was inversely proportional to the degree of renal insufficiency. Failure to prescribe antiplatelet therapy at discharge was strongly associated with increased MACE at 1 year (MACE rate of 43% off Thienopyridine vs. 23% on Thienopyridine, p < 0.001).
Conclusions: (1) Patients with even mild or moderate degrees of renal insufficiency are less likely to receive optimal discharge pharmacotherapy after PCI despite higher cardiovascular risk. (2) An incremental decline in the prescription rate of all guideline recommended medications including those with a Class I indication is evident, not only those with relative contraindication in patients with renal impairment. (3) Failure to prescribe a thienopyridine at discharge was associated with significantly increased MACE at 1 year.

Table 1 Prescription rates of discharge medication by degrees of renal impairment

Meds on discharge	eGFR (ml/min/1.73 m^2)					
	<45 (n = 639)	45–59 (n = 1,004)	60–74 (n = 1,534)	≥ 75 (n = 2,815)	p value overall	p value trend
Statin (%)	73.6	76.4	81.9	81.6	<0.001	<0.001
Aspirin (%)	93.7	95.5	96.7	96.9	<0.001	<0.001
Clopidogrel (%)	93.4	93.9	95.6	96.4	<0.001	<0.001
Beta blocker (%)	80.8	76.0	80.5	81.5	0.003	0.03
ACE Inhibitor %)	45.9	52.3	52.9	51.5	0.02	0.10
Coumadin (%)	11.7	10.0	7.4	6.3	<0.001	<0.001

55. In Primary Percutaneous Coronary Intervention Mortality is Low and Largely Predictable

Dooley M, Belfast Trust pPCI Service Group

Belfast Trust, Belfast

Introduction: The National Infarct Angioplasty Project (NIAP) reported a low in-hospital mortality of 4.4% for primary percutaneous intervention (pPCI) for ST elevation myocardial infarction (STEMI). A 24/7 pPCI service was commenced in Belfast in December 2009. We have audited our results against this standard and looked for recognised predictors of adverse outcome.
Results: In the 13 month period from February 2010 to February 2011 a total of 236 patients activated the pPCI pathway. Of the 236 patients, 24 (10%) were non acute coronary syndrome and 9 patients had a non-STEMI. The remaining 203 patients had STEMI and 198 proceeded to pPCI. 5 STEMI patients did not have pPCI (died before lab, age 99, distal disease, normal coronaries, coronary artery dissection). Analysis was performed on the 203 patients with STEMI. There were ten in hospital deaths (4.9%) (7 male, mean age 67.3; range 37–89). One patient died from cardiogenic shock before reaching the catheterisation lab, three died in the lab, three within 48 h and one each on days 7, 28 and 44. Four of the ten patients had cardiac arrest on admission and eight had cardiogenic shock. Intra-aortic balloon pump was used in seven cases and temporary pacing in one case. Of the nine patients undergoing angiography all had left main stem or severe triple vessel disease, Angioplasty was attempted in eight cases and angiographic success achieved in four cases (two

with TIMI 3 flow). Of the six patients who survived the procedure one died suddenly and the others from pump failure.
Conclusion: In hospital mortality for all comers in a pPCI programme is low and deaths are largely predictable.

56. Single Centre Experience of Contemporary Rotablation Atherectomy

Pal N, Spence M, Manoharan G, Dalzell G, Wilson C, Hanratty C, Walsh S, Riddell J, Johnston P

Royal Victoria Hospital, Belfast

Introduction: Early experience with rotational atherectomy, using high burr-to-artery ratios, resulted in a high complication rate. Contemporary practice employs a strategy of lesion modification, using smaller burrs, to facilitate stent implantation. We report a single center experience.
Results: A total of 156 rotablations were performed over a 35 month period from May 2008. The mean age was 73.2 years (range 43–95) (73% male). 27 patients were "surgical turn downs" and 6 were part of a transcatheter valve programme. Most patients had one vessel treated (71%), the remainder were double vessel procedures. Vessels treated—LAD (49%), RCA (26%), left circumflex (14%) and left main stem (11%). 46% of lesions involved a bifurcation. Most procedures (61%) were performed by 2 consultants. Mean procedure time was 123.6 min and mean screening time 30.2 min. IVUS was used in 59 cases, temporary pacing in 39 cases and IABP support in 10 cases. A Guideliner was needed in 15 cases. A single burr strategy was most common (58%), two burrs were used in 38% cases and three burrs in 4%. The most common burr size was 1.5 mm (55%), followed by 1.25 mm (24%), 1.75 mm (18%), 2 mm (2%) and 2.5 mm (1%). Stents were successfully deployed in all but one case, 96% were drug eluting. A one stent strategy was most common (44%) followed by two stents (36%), three stents (15%), four stents (3%) and six stents (2%). Mean stent length was 27.3 mm (95% CI 25.5–29.1), mean diameter was 3.3 mm. Angiographic success was 100%. Coronary perforation occurred in six cases (3.8%) requiring covered stent in five cases (3.2%). No patient required pericardiocentesis or emergency CABG. ST elevation myocardial infarction occurred in three cases. One patient died from a retroperitoneal bleed 24 h post procedure. Contemporary rotablation can be performed in complex patients with low procedural risk.

Poster Presentation

57. Re-Fibrillating the Atrium with Low Energy, Synchronized Shocks after DFT Testing

Cronin EM, Baranowski BJ, Chung R, Wazni O, Kanj M, Saliba W, Callahan T, Borek P, Martin DO

Cleveland Clinic, Cleveland, OH USA

Background: Many patients undergoing defibrillator (ICD) implantation are in atrial fibrillation (AF) at the time of the procedure. If defibrillation threshold (DFT) testing is performed, a patient in AF may convert to sinus rhythm (SR). If anticoagulation is stopped prior to ICD implantation, the patient may be at increased risk for a thromboembolic event if left in SR. It is standard practice in our lab to re-induce AF if a patient converts to SR following DFT testing and is not therapeutically anticoagulated.
Objective: The purpose of this study is to describe our experience with patients in AF who undergo ICD implantation and DFT testing.
Methods and Results: We reviewed 501 consecutive patients who presented to our lab in AF and underwent DFT testing between 1/1/2002 and 1/1/2010. DFT testing converted 191 patients (38%) to SR. Patients were more likely to convert when more shocks were delivered (1.5 vs. 1.9 shocks, $p = 0.001$) and when their pattern of AF was paroxysmal versus persistent ($p = 0.03$). The mean maximum delivered shock of those wh converted was higher than those who did not convert (17 vs. 15 J, $p = 0.01$). Of the 191 patients who converted, we attempted to re-induce AF in 150 (78%). The most commonly used method to re-induce AF was rapid atrial pacing, either through the implanted DDD device ($n = 137$) or via an EP catheter ($n = 23$). This mechanism was successful at reinducing AF in 137 if 140 patients (98%). In ten patients who did not have an atrial lead a low energy shock (1 or 2 J) synchronized to the QRS complex was used. This method was successful in nine of the ten patients. The rate of success did not differ significantly between the two re-induction approaches ($p = 0.28$). The single patient who failed to have AF re-induced with a synchronized low energy shock could also not be re-induced with burst pacing.
Conclusion: A low energy shock synchronized to the QRS complex is a feasible mechanism for the re-induction of AF and should be considered when attempting to re-induce AF after DFT testing, especially in patients who do not have an atrial lead.

58. A Comparison of Complication Rates Between Active and Passive Pacemaker Leads

Matiullah S, Canniffe C, Boyle M, Aziz W, Phelan D, O'Sullivan B, Daly K, Crowley J, Sharif F, MacNeill B, Nash P

Galway University Hospital, Galway

Previous studies report a similar rate of complications in active and passive atrial leads, however they do report an increased rate of lead dislodgement with passive atrial leads. There is little data comparing active and passive ventricular leads. We reviewed patients who underwent permanent pacemaker implantation between 1 January and 31 December 2010 to determine if there was a significant difference in complication rate between active and passive atrial and ventricular leads.
Methods: Patients were identified through the cardiac technician database. A systematic review of implantation record, patient discharge summaries and any recorded complications were noted. Patient charts were reviewed if data from these records was insufficient for study purposes.
Results: 208 patients were identified. 55.2% of the population were male. Mean Age was 75.9 years (range 34–98 years) 67.7% of implanted devices were single chamber devices, with dual chamber devices accounting for 32.2%. In single chamber devices the number of active and passive leads were 96 (68.5%) and 44 (31.4%), respectively. Of the dual chamber devices, 88% of ventricular leads were active fixation leads, whilst 76.1% of atrial leads were active fixation. Lead failure was the commonest complication being reported in 2.8% of all cases. Amongst ventricular leads, there were six cases of lead failure. These were all reported in active leads, amounting to a 3.8% lead failure rate in ventricular active leads versus 0% rate of lead failure in ventricular passive leads. 83.3% of lead failures were found to be secondary to lead movement and threshold changes. There were four reported cases of lead failure amongst atrial leads, amounting to a 5.9% rate of lead failure. 50% of these were in the active atrial leads versu 50% in passive leads. Again, the commonest

reason for lead failure was either movement and threshold change. All these cases required a repositioning procedure. There was no significant difference between the two groups in terms of infection rates, pocket complications or pneumothorax occurence.
Conclusion: We found no significant differences between active and passive atrial leads in terms of lead failure and other complications. There was a higher rate of ventricular lead failure amongst active leads, with no reports of lead failure amongst passive leads.

59. Varying Prevalences of Chronotropic Incompetence from Different Disease Definitions

Groarke J, Lim RY, Owens P, Maree AO

Department of Cardiology, Waterford Regional Hospital, Waterford

Introduction: Chronotropic incompetence (CI) is often overlooked in clinical practice however is common, and has symptomatic and prognostic implications for patients. The aim of this study was to investigate the prevalence of CI among patients undergoing Bruce protocol exercise stress tests (ESTs).
Methods: Data on consecutive patients (n = 295) who underwent ESTs between 5/11/10 and 26/1/11 were analysed, retrospectively. Data were analysed using following definitions of CI: failure to achieve: (1) >80% of maximum age predicted HR (MPHR); (2) >85% of MPHR; (3) a HR <120 bpm; (4) or a chronotropic index <0.8 at maximum exercise. MPHR at peak exercise was calculated using the Astrand's formula: (220-age) bpm. Chronotropic index was defined as a ratio of percentage of HR reserve used to percentage of metabolic reserve used. Percentage of HR reserve is calculated as (maximum HR achieved-resting HR)/(MPHR − Resting HR) × 100. As all patients underwent symptom-limited testing the proportion of metabolic reserve used has a value of 1, and thus chronotropic index can be simplified as the fraction of HR reserve used at peak exercise. All AV nodal blocking medications were interrupted for 72 h prior to EST in all patients. Correlation with available echocardiography data was performed. Students *t* test and Fischer's exact test were used for analyses.
Results: 295 patients were included in analyses outlined in Table 1: 25 (9%) patients satisfied all 4 definitions used, 12 (4%) satisfied 3 of 4 definitions and 16 (5%) satisfied 2 of 4 definitions.
Conclusions: The prevalence of CI varies from 8 to 27% within the same patient cohort depending on the definition used. Patients with CI were significantly older, had lower resting HRs and achieved fewer peak metabolic equivalents during exercise. Symptoms were more likely to limit patients with CI during exercise but duration of exercise tolerated did not differ significantly. Consensus on a definition that identifies clinically relevant CI is needed.

60. Implantable Cardioverter Defibrillator Therapy in a Mixed Adult Congenital Heart Disease Population

Joyce E, O'Brien C, Buckley U, Keaney J, Doran E, Savage R, Walsh K

Mater Misericordiae Hospital, Eccles St, Dublin

Introduction: Sudden death accounts for a lower fraction of mortality in adult congenital heart disease (ACHD) than acquired heart disease. Meanwhile significant variability in sudden death risk exists between different anatomic diagnoses. Therefore current accepted guidelines regarding implantable cardioverter defibrillator (ICD) implantation in the acquired heart disease population are difficult to extrapolate to this population. The aim of the study is to review ICD usage including patient characteristics, frequency of appropriate therapies and adverse events in our mixed ACHD national referral centre cohort.
Methods: Patients with ICDs were selected from chart reviews of current attendees at the ACHD national clinic. Baseline clinical characteristics including age, diagnosis, prior surgeries and/or palliative shunts, residual hemodynamic lesions, New York Heart

	Failure to achieve >80% MPHR			Failure to achieve >85% MPHR			Failure to achieve peak HR >120 bpm			Failure to achieve chronotropic index >0.8		
	Yes	No	P value	Yes	No	P value	Yes	No	P value	Yes	No	P value
n (%)	37 (13%)	258 (87%)		49 (17%)	246 (83%)		22 (8%)	273 (82%)		79 (27%)	216 (73%)	
Age, mean (SD)	63 (11)	56 (14)	0.002	61 (12)	56 (14)	0.02	64 (9)	56 (14)	<0.001	61 (13)	55 (14)	0.002
Males (%)	25 (68%)	161 (62%)		65%	63%		15 (68%)	171 (63%)		51 (65%)	135 (63%)	
Resting HR, mean (SD)	67 (14)	81 (15)	<0.001	72 (14)	81 (15)	<0.001	67 (14)	81 (15)	<0.001	77 (14)	81 (16)	0.04
Exercise Capacity												
METS, mean (SD)	8.1 (2.9)	10.7 (2.7)	<0.001	8.2 (2.8)	10.8 (3.3)	<0.001	6.5 (3.8)	10.7 (4.1)	<0.001	8.6 (2.7)	11.1 (2.7)	<0.001
Exercise time, mean (SD)	8:14 (3:14)	8:55 (3:24)	0.22	9:15 (3:54)	8:43 (4:17)	0.28	57 (3:05)	8:48 (3:15)	0.82	8:58 (3:13)	8:45 (3:57)	0.59
Peak HR, mean (SD)	114 (18)	160 (18)	<0.001	118 (19)	161 (17)	<0.001	101 (14)	158 (19)	<0.001	127 (21)	163 (16)	<0.001
HR reserve, mean (SD)	89 (15)	84 (20)	0.15	87 (15)	84 (20)	0.25	83 (17)	84 (19)	0.78	83 (16)	85 (21)	0.64
% MPHR achieved, mean (SD)	70% (8%)	97% (8%)	<0.001	73% (9%)	98% (7%)	<0.001	67% (9%)	96% (9%)	<0.001	79% (11%)	99% (7%)	<0.001
Echo data available (%)	26 (70%)	160 (62%)		26 (53%)	162 (66%)		16 (73%)	171 (63%)		51 (65%)	137 (63%)	
EF >55%	23 (89%)	141 (88%)	0.98	23 (89%)	143 (88%)	0.98	12 (75%)	144 (84%)	0.99	42 (82%)	115 (84%)	0.99
No limiting symptoms during EST	6 (16%)	63 (24%)	0.99	7 (14%)	62 (25%)	0.99	4 (18%)	65 (24%)	0.99	9 (11%)	60 (28%)	0.94

Association (NYHA) Class, systemic ventricular function and QRS duration were noted. Occurence of appropriate therapies (defibrillation and/or anti-tachycardia pacing) was recorded using regular device check data. Adverse events at the time of implantation and during follow-up were also included.
Results: Out of 953 ACHD patients, ICDs were implanted in 22 (63.6% male, mean age 30.5 years; mean NYHA 1.8; mean QRS duration 140). Transposition of the great vessels was the most common single diagnosis (36.4%). The majority of implants were for primary prevention (86.4%). Over a median follow-up of 36 months, six appropriate therapies occurred in five patients. All those with appropriate therapies had reduced systemic ventricular function. Five patients suffered adverse events (2 inappropriate shocks, 1 endocarditis, 1 lead fracture, 1 lead repositioning).
Conclusions: ICD implantation in the ACHD population is infrequent but should be considered in selected patients including those with complex congenital lesions. An appropriate therapy occured in just over 20% of patients. As noted previously, systemic ventricle dysfunction appears a major predictor of appropriate therapies. Adverse event rate including number of inappropriate therapies was low.

61. The Degree of QRS Shortening After Resynchronization Therapy as a Predictor of LV Reverse Remodeling: a Long Term Retrospective Observational Study in a Single Irish Center

AlQaseer M, Jamshaid M, Collis R, Collins A, Sheahan R

Beaumont Hospital, Beaumont, Dublin

Background: It has been proven in several randomized multicenter trials that a prolonged QRS duration is currently the only reliable marker of electro-mechanical dyssynchrony. The aim of this study is to assess the value of degree of QRS shortening after resynchronization therapy as a predictor of LV reverse remodeling in those patients treated with CRT.
Methods: This is a retrospective observational study. The data was obtained from a 10-year registry of CRT implants in a single center in Ireland. We looked at all consecutive alive patients with CRT's implanted from 2001 until August 2010. We looked at their measured QRS duration prior to implant and the QRS duration of their biventricular paced complex. We then looked at the relationship of the degree of QRS shortening to the change of ejection fraction (EF) at least 6 months post implant using a bivariate analysis.
Study Results: 143 patients were identified with CRTs implanted between 2001 and August 2010. They were divided into five categories based on the change of QRS duration from their native complex to the biventricular paced complex. 8 patients had a reduction of their QRS duration by an increment of 0–5 ms, 23 had a reduction of 6–15 ms, 27 showed improvement by 16–20 ms, and 78 showed reduction of QRS duration by more than 21 ms. Finally, seven patients had biventricular paced complexes that were longer than native complexes. Overall, there was a clear trend of improvement in ejection fraction despite the degree of QRS shortening with maximal benefit of improvement of ejection fraction in the reduction of QRS duration by >21 ms where there was an improvement of EF by 4.6% on average (from 29.3% to 33.9%). However, this did not reach statistical significance ($p = 0.08$).
Conclusion: Although our results have not reached statistical significance, a trend is certainly observed in our data to suggest that the degree of QRS shortening may be used a predictor of LV reverse remodeling in those patients treated with CRT.

62. Sprint Fidelis Lead Failure: a Report from Northern Ireland

[1]Kodoth V, [2]Gordon B, [1]Ashfield K, [1]Lau E, [1]Wilson C, [2]Chew EW, [1]Roberts MJ

[1]The Heart Centre, Royal Victoria Hospital, Belfast, [2]Cardiology Department, Belfast City Hospital, Belfast

The Medtronic Sprint Fidelis family of leads are bipolar high-voltage implantable cardioverter defibrillator (ICD) electrodes. The lead is prone to malfunction, and in October 2007, were removed from the market. The first Sprint Fidelis lead was implanted in Northern Ireland immediately after its release in December 2004. Longer survival analysis for these leads can be made in view of early implant. Patient follow up data was reviewed to determine the rate, characteristics and mode of presentation of lead failure.
Methods and Results: A total of 260 patients had the Sprint Fidelis leads implanted in Northern Ireland. All patients were followed up **three monthly after lead alert was issued. In a combined follow up of 1,004 years and a mean of 3.80 years, 26 of 260 (10%) leads malfunctioned. Fourteen cases (53%) of lead malfunction were detected after lead integrity alert software has been installed. Twenty-three out of 198 (11.6%) of model 6931, 1 of 35 (2.8%) of model 6948 and 2 of 26 (7.6%) of model 6949 malfunctioned. The mode of presentation was inappropriate shock in 13 (50%), alarm alert in 7 (27%) and high impedance and pace/sensing issues in 6 (23%). In these patients, the previous three monthly lead checks were normal. The median and mean duration for lead failure were 1,035 and 996 days. Two leads malfunctioned within 1 year, 2 within 2 years, 7 within 3 years, 11 within 4 years and 4 within 5 years of implant. The Sprint Fidelis lead was removed and replaced in 17 (65%), 3 (11%) patients had new pace/sense lead implanted, 4 (15%) had new ICD lead implanted, 1 had device turned off and one patient is awaiting intervention.
Conclusion: In our experience a high proportion of Sprint Fidelis lead had to be replaced due to malfunction. Fifty percent of the lead failure patients presented with inappropriate shocks. Three monthly lead checks could not anticipate lead malfunction.

63. An Overview of Pacemaker and Device Implantations in the West of Ireland

Canniffe C, Matiullah S, Aziz W, Boyle M, O'Sullivan C, Phelan D, Daly K, Crowley J, Nash P, Sharif F, MacNeill B

Galway University Hospital, Galway

We carried out a retrospective review of pacemaker and cardiac devices implantations in Galway University Hospital between 1 January 2010 and 31 December 2010.
Method: 309 patients were identified through the cardiac technician database. A systematic review of implantation record, patient discharge summaries and any recorded complications were noted. Patient charts were reviewed if data from these records was insufficient for study purposes.
Results: 61.8% were male. The mean age was 75.3 years (range 15–98 years).We recorded patient characteristics relevant to the potential development of complications of device implantation. 240 (77.6%) implants were first time procedures. 32 (13.2%) of these were intracardiac defibrillators (ICD) or biventricular devices (Bi-Vent), 67 (27.9%) dual chamber and 141 (58.7%) were single chamber pacemakers. Subclavian access was the commonest mode of implant, with brachiocephalic access in 10.7% of cases.

Temporary pacing wires (TPW) were placed in 11% of patients prior to their procedure. Repeat procedures (not including routine box change for end of life) were reported in 10.6% of patients. 36.3% were secondary to complications that resulted in the need for box +/− ead removal or new lead placement. A lead repositioning procedure accounted for 27.2% of these. Upgrade of a device from ICD to BiVent accounted for 21.2%. Infection was reported in 3.5% of all cases. Pocket infections accounted for 45.5% of these. Of the patients who developed infection 18.1% were diabetics, 36.3% had an EF <49%. 72.7% of infections were related to repeat procedures ($p = 0.003$), with box changes accounting for 50% of these. 45.4% of these required removal of box +/− ead(s), with a further 9% requiring removal of the box alone. Pocket problems were reported in 4.2%. Haematomas accounted for 46% of these, followed by skin erosion (38.4%) and pain (15.3%). 23% of these patients required an evacuation, 38.4% required box removal. Of note, 38.4% of patients who developed pocket complications had a history of anticoagulation therapy. A further 15.3% were on dual antiplatelet therapy. Lead failure was reported in 5.1%. 52.6% of these were patients over 75 years old. The commonest reason was found to be lead movement (53.8%). 81.2% of these patients required a repositioning procedure.

Conclusion: We report the experience of a large volume centre for pacemaker and cardiac device implantation. Based on our experience we would recommend exercising particular caution with implantation procedures in elderly patients and paying close attention to sterility and antibiotic regimes in those undergoing repeat procedures.

64. Primary Percutaneous Coronary Intervention "False Positives"

Dooley M, Belfast Trust pPCI Service Group

Belfast Trust, Belfast

Introduction: A primary percutaneous coronary intervention (pPCI) service requires a simple method of activation to prevent unnecessary delays to reperfusion. This can result in a significant proportion of false positive referrals, which nationally runs between 10 and 20%. This group of patients is often viewed as an unfortunate but necessary distraction to the pPCI service.

Results: A 24/7 pPCI service was introduced in Belfast in December 2009. In the 13 month period from February 2010 to February 2011 a total of 236 patients activated the pPCI pathway by having ST segment elevation on Electrocardiogram (ECG). 70.8% were male (mean age 61.5 years; range 30–99). Of the 236 patients, 24 (10%) were non-acute coronary syndrome (ACS) with normal coronary arteries. Of these 24 patients, 5 had a past history of Ischaemic Heart Disease but no evidence of current ACS with normal cardiac troponin and 3 patients had isolated abnormal ECGs (LBBB, early repolarisation, ST elevation over old infarction with fast AF). However the remaining 16 patients had significant cardiac pathology. The most common finding was myopericarditis, present in ten patients. 3 patients had a Takotsubo's cardiomyopathy and one patient a probable infiltrative cardiomyopathy. Cardiovascular magnetic resonance (CMR) was used to clarify the diagnosis in most patients. 2 further patients presented for the first time with Brugada syndrome, one had easily inducible Ventricular Fibrillation at electrophysiological study and received an Implantable Cardiac Defibrillator.

Conclusion: Far from being a distraction "false positive" patients without ACS in a pPCI pathway often present with major cardiac pathology.

65. Impact of Targeted Subspecialist Care Versus Generalist Care on Lengths of Hospital Stay and Costs across Common Diagnostic Groups

Groarke J, Maree AO, Owens P

Department of Cardiology, Waterford Regional Hospital, Waterford

Introduction: Many hospitals have a variety of medical subspecialists involved in the care of acute medical admissions. This study aims to compare lengths of hospital stay (LOS) for relevant subspecialist care versus other subspecialist or generalist care across common diagnostic categories in an Irish public teaching hospital.

Methods: All patients discharged over a 55 month period with the following primary diagnoses were identified using the Hospital In-Patient Enquiry (HIPE) system: exacerbation of chronic obstructive pulmonary disease (COPD), pneumonia, acute myocardial infarction (AMI), chest pain (CP), CHF, non-haemorrhagic stroke, and transient ischaemic attack (TIA). To exclude outlying patients with extended stays due to complex medical or social reasons, patients with LOS exceeding 30 days were excluded from analyses. Differences between LOS for subspecialist versus other subspecialist/generalist care for each diagnostic group were investigated using the Student's *t* test. Cost savings were estimated.

Results: Comparative analyses of subspecialist versus other subspecialist/generalist care for the various diagnostic groups are outlined in Table 1 below.

	Admitted under Relevant Subspecialty	Admitted under Other Subspecialty	p value
Chest pain			
n	494	1,345	<0.0001
Mean LOS (SD)	2.0 (2.0) days	3.6 (3.2) days	
Pneumonia			
n	80	712	<0.0001
Mean LOS (SD)	5.0 (4.7) days	8.8 (6.5) days	
COPD exacerbation			
n	200	1,637	0.0005
Mean LOS (SD)	6.8 (6.0) days	8.4 (6.0) days	
AMI			
n	335	679	0.43
Mean LOS (SD)	7.0 (5.0) days	7.5 (6.0) days	
CHF			
n	166	770	0.15
Mean LOS (SD)	8.6 (6.5) days	9.5 (6.5) days	
Stroke			
n	226	282	<0.0001
Mean LOS (SD)	10.9 (7.8) days	8.3 (6.1) days	
TIA			
n	78	388	0.21
Mean LOS (SD)	4.4 (4.4) days	5.1 (4.4) days	

If patients with primary diagnoses of CP, COPD exacerbations and pneumonia were triaged to relevant subspecialist care, 1,632 bed days

and Euro1,082,824 would be the potential annual savings for this hospital.
Conclusions: Subspecialist care of patients with CP, COPD exacerbations and pneumonias achieves significant reductions in LOS in comparison to care delivered by other medical subspecialists. Cost savings of targeting relevant subspecialist care to these diagnostic groups could be significant at an institutional and national level. Specialty-specific care reduced LOS in selected diagnostic groups only. Studies to clarify which diagnostic groups benefit most from targeted subspecialist care are necessary.

66. Constrictive Pericarditis, Still a Diagnostic Challenge in the Twenty-First Century: an Irish Single-Centre Retrospective Cohort Study

Moran DP, Khalil A, O Donnell A, Kiernan TJ

Department of Cardiology and Cardiothoracic Surgery, University College Cork, Cork University Hospital, Cork

Constrictive pericarditis is a condition of a thickened pericardium, resulting in a loss of elasticity leading to haemodynamic compromise. Often this is a late sequela to an inflammatory condition of the pericardium. Classically the risk factors for constrictive pericarditis are tuberculous infection, radiation therapy and cardiotomy. Despite extensive testing with 2-dimensional and Doppler echocardiography, cardiac CT, CMR and conventional cardiac catheterization, the diagnosis may remain equivocal.
Purpose: This is the first review of this cohort within the south of Ireland. We reviewed the diagnostic modalities used, reviewed the haemodynamics obtained and identify likely aetiology in each case.
Methods: Patients were identified retrospectively from 2003 to 2007 using surgical database analysis. Medical charts, angiographic, computed tomography, echocardiographic data, MRI and histology reports were obtained.
Results: 10 patients were identified from post-pericardiectomy records. Median age was 56.6 (±23.6) years. 7 male (70%), 3 female. Previous TB infection was identified in 2 patients (20%). Post-cardiotomy (MVR) as an aetiology was identified in 1 patient. Mediastinal radiotherapy (NHL) was the causative agent in 1 patient. Therefore, 60% of cases were deemed Idiopathic Constrictive Pericarditis in terms of aetiology. Echocardiographic data suggested constrictive pericarditis in five patients (50%) with the presence of abnormal ventricular septal motion and restrictive mitral inflow velocities with respiratory variation. CT reporting suggested constrictive pericarditis in five patients (50%), commenting on pericardial thickening/calcification.
MRI was used to further elucidate diagnosis in four patients (40%). Classic invasive haemodynamic tracings of constrictive pericarditis ("dip and plateau" of LV pressure +/− qualisation of end-diastolic pressures in all 4 chambers) were identified in all patients.
Conclusions: The aetiology of constrictive pericarditis in the twenty-first century continues to be dominated by Idiopathic Constrictive Pericarditis. Invasive haemodynamics remains the chief diagnostic tool in identifying cardiac constriction, and imaging modalities continue to lag behind.

67. Percutaneous Left Atrial Apendage Closure (PLAATO): 5-year Outcomes

Neylon MA, O'Connor SA, Mylotte D, McAdam B, Sheahan R, Foley D

Beaumont Hospital, Beaumont, Dublin

Stroke is the third leading cause of mortality and a leading cause of morbidity worldwide. Cardioembolic strokes are associated with the worst long term prognosis and most commonly occur in patients with Atrial Fibrillation. Despite the proven efficacy of oral anticoagulation it remains underutilized, difficult to manage and associated with significant morbidity and bleeding complications. Newer agents such as Dabigatran address some of these issues, however there remains a cohort of patients with absolute contraindications to oral anticoagulation in whom occlusion of the Left Atrial Appendage (LAA) has had favourable short and medium term outcomes. We present our 5 year follow-up with the PLAATO system. We performed a prospective, single-centre observational study in which LAA occlusion was attempted in between July 2005 and October 2006. All patients had contraindications to warfarin. The primary end-point was the incidence of stroke. Clinical follow-up at a mean of 65 months (range 54–68) was carried out by review of case notes and telephonic interview. 16 patients had successful device placement. Mean patient age was 73.2 years. 3 patients died during follow-up of non cardiac related complications. Another patient had the device removed 11 month post placement when undergoing mitral valve surgery for progressive MR. 5-year data is available on 12 patients. Their average CHADS2-vasc score for the remaining cohort was 5 estimating an adjusted stroke rate of 6.7% per year. There was one stroke during follow-up. This occurred 28 months after implant when on asprin only. Following this dual antiplatelet therapy was recommenced and no further events have occurred. No other systemic embolic events or complications related to the PLAATO were seen. In conclusion, in this small series LAA occlusion with the PLAATO device in the longer term decreases the risk of stroke in a high risk cohort of patients with atrial fibrillation deemed unsuitable for oral anticoagulation.

68. Real World Costs of Non-Cardiac Chest Pain Admissions

Groarke J, O'Brien J, Go G, Susanto M, Owens P, Maree AO

Department of Cardiology, Waterford Regional Hospital, Waterford

Introduction: 65% of patients presenting with chest pain (CP) to emergency departments are admitted. The majority will have a non-cardiac aetiology for their symptoms. The aim of this study was to describe the cost of non-cardiac CP admissions to a tertiary hospital and identify areas of greatest expenditure.
Methods: 80 consecutive patients admitted with CP between 15/1/11 and 12/3/11 were prospectively followed. Demographics, investigations, TIMI risk score, lengths of stay (LOS) and discharge diagnoses were recorded for all patients. Admissions of patients with a discharge diagnosis of non-cardiac CP were micro-costed.
Results: Of 80 patients with a mean age (SD; range) = 61 (14; 35–94) years [mean LOS = 5.5 (3.8; 1–16) days; mean TIMI risk score = 2.2 (1.6; 0–6)], a diagnosis of acute coronary syndrome was established in 22 (28%) [mean age = 67 (14; 43–94) years; 14 (64%) male; mean TIMI risk score = 3.1 (1.2; 0–5); mean LOS = 7.7 (4.3; 2–16)]. The 34 patients with a discharge diagnosis of non-cardiac CP [mean age = 54 (11; 35–74); 20 (59%) male; mean TIMI risk score = 1.4 (1.5; 0–5)] had a mean LOS of 3.8 (2.6; 1–11) days. Only 2 (6%) were weekend discharges. The mean intervals in days from admission to EST (n = 20), coronary angiography (n = 3) and CT pulmonary angiography (n = 5) were 2.7 (1.5; 1–7) days, 6.7 (0.6; 6–7) and 1.6 (1.3; 1–4), respectively. The total cost for all 34 admissions was Euro129,251 with the breakdown of costs as follows: bed day/radiology/cardiac/laboratory investigation costs = Euro118,170 (91%)/Euro4,900 (4%)/Euro3,662 (3%)/Euro2,519 (2%). The mean

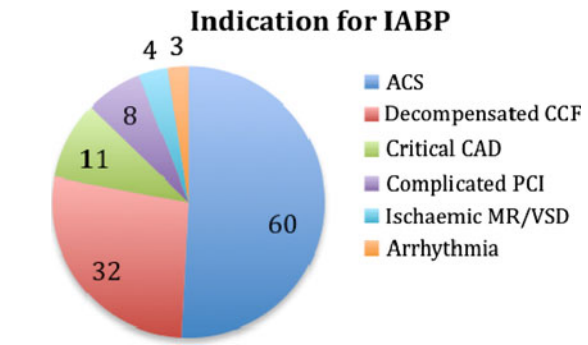
cost per non-cardiac CP admission was Euro3,802 (Euro2,381; Euro1,110–10,708).
Conclusion: The mean cost of admission and LOS for a patient with a discharge diagnosis of non-cardiac CP of Euro3,802 and 3.8 days are higher than the respective figures quoted by National Casemix Programme of Euro1,596 and 2.8 days. Bed day costs are the greatest component of overall costs. Delays from admissions to diagnostic tests are significant and percentage of weekend discharges is very low. Strategies to reduce delays to testing and increase weekend discharges would likely reduce LOS with cost savings.

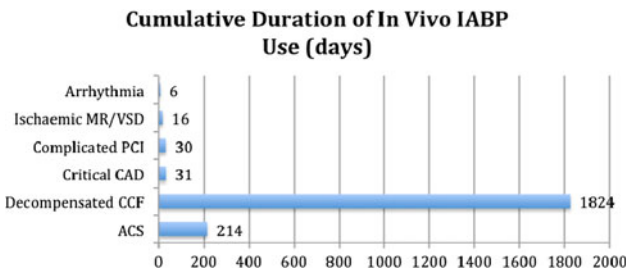
69. Evolving Trends of Intra-Aortic Balloon Pump Counterpulsation (IABP) Usage in a Tertiary Cardiac Transplant Centre from 2008 to 2010

Anwar AA, Roy A, Mustafa G, Joyce E, Buckley U, Nashat H, Sugrue D, McCann H, Blake G, Mahon N

Mater Misericordiae Hospital, Dublin

Background: The growing prevalence and complexity of end-stage heart failure, coupled with declining cardiac transplant rates, have created an increasing demand for prolonged inotropic and intra-aortic balloon pump (IABP) support in patients awaiting more definitive destination therapy.
Aim: The aim of this study was to document patterns and outcomes of IABP usage in an era of more efficient management of acute coronary syndromes and an increasing burden of advanced heart failure.
Methods: All patients who received an IABP between 2008 and 2010 were identified via cardiac catheterisation lab records. Charts and computer records were examined retrospectively.
Results: 118 patients had IABP insertion in this period. Median age was 65.5 ± 13.7 years. Male 81 (68.6%).





In our cohort, IABP remained in vivo for a total of 2,121 days. Decompensated CCF had the longest duration of IABP use, 1,824 days.

IABP related adverse events occurred in 47 patients.

Adverse event	Decompensated CCF (n = 32, %)	All other patients (n = 86, %)
IABP-related deaths	0 (0%)	3 (3%)
Major embolic event	1 (3%)	1 (1%)
HITS	2 (6%)	1 (1%)
Retroperitoneal bleed	2 (6%)	0 (0%)
Major bleeding	4 (13%)	4 (5%)
Culture +ve IABP	6 (19%)	3 (3%)
Culture +ve PUO	2 (6%)	2 (2%)
Culture −ve PUO	7 (22%)	9 (10%)

In-hospital mortality was 36 (30.5%). Cardiac death occurred in 28 (23.7%). Nosocomial septicaemia caused 5 (4.2%) deaths. IABP-related death in 3 (2.5%) were due to ischaemic bowel, Lepirudin associated intracranial haemorrhage, and renal ischaemia.
Conclusion: End stage heart failure accounts for a significant proportion of indications for IABP, and is associated with prolonged therapy and a consequent higher complication rate. This highlights the need both for optimization of organ donation, and continued development of alternative long-term haemodynamic support options, including ventricular assist devices as bridges to transplantation or destination therapy.

70. Atrial Fibrillation in Paced Rhythm: "Under-Diagnosed and Under-Recognized"

Alkhalil M, Quinn S, Magill P, Tauro R, Prabhavalkar S

Belfast Health and Social Care Trust, Belfast

Introduction: Atrial fibrillation (AF) is the most common cardiac arrhythmia, occurring in 1–2% of the general population [1]. AF confers a fivefold risk of stroke and effective treatment strategies exist which have shown to reduce thromboembolic events. There is only scant published evidence demonstrating the importance of diagnosing AF in patients with paced rhythm as this can be a potential pitfall leading to a diagnostic error [2].
Aim: We aimed to gauge the diagnostic ability of doctors to recognize AF in paced rhythm based on Electrocardiograph (ECG) interpretation.
Method: We formed a questionnaire involving four questions based on an ECG showing paced rhythm and AF. A brief clinical history was provided and the participants were asked to identify the rate, axis, rhythm and whether they would consider any further intervention. Fifty-two participants were involved from 3 hospitals within the Belfast trust. These included Foundation and Core trainees, Specialty trainees and Consultants in Medicine. The responses were obtained anonymously.
Results: 19% (10 out of 52) doctors identified AF rhythm correctly and only half of them (9.6%) recommended warfarin. 63% (33 out of 52) doctors reported paced rhythm with no further comment on the missing P waves. Interestingly, more than 60% of doctors (32 out of 52) identified the axis incorrectly.
Conclusions: Our study demonstrates under-recognition of this fairly common condition among hospital doctors. It highlights the need for

increasing awareness among trainees in recognising this pitfall and diagnosing AF in patients with paced rhythm in order to reduce mortality and morbidity associated with this condition.

References

1. European Society of Cardiology Clinical practice guidelines (2010).
2. Treatment of underlying atrial fibrillation: paced rhythm obscures recognition. J Am Coll Cardiol. 2000;36(3):784–787

71. Cardiac Contribution to the Workload of Medical Assessment Units (MAUs)

Groarke J, McMenamin L, McConway L

Medical Assessment Unit, Waterford Regional Hospital, Waterford

Introduction: The role of MAUs in management of medical patients and their staffing is very topical. The aim of this study is to describe the type of patient presenting to, and resource utilisation by, a MAU of a tertiary referral hospital.
Methods: A prospective, observational cohort study was performed. Consecutive patients presenting to a MAU between 31/1/11 and 3/4/11 were invited to participate. Demographics, presenting complaint, investigations, and management plan were recorded for each patient. 30-day outcomes were sought for all patients.
Results: Of 74 patients [mean age (SD; range) = 47 (17; 16–87) years; 46 (62%) female], cardiovascular symptoms were the presenting complaint of 38 (51%): chest pain (CP) alone in 16 (22%), CP with dyspnoea in 9 (12%), palpitations in 6 (8%), presyncope/syncope in 4 (6%) and dyspnoea in 3 (4%). 34% of primary diagnoses were cardiac in nature: 15 (20%) cardiac CP, 4 (5%) symptomatic ectopics, 3 (4%) hypertension, 2 (3%) atrial fibrillation, 1 (1.5%) cardiac syncope. Echocardiograms, exercise stress tests, 24 h holter and blood pressure monitors were performed on 37 (50%), 20 (27%), 19 (25%) and 12 (15%) of patients, respectively. The majority of cardiac investigations were performed on day of initial presentation. Priority access to cardiac investigations was identified as a primary factor in avoiding admission in 41 (64%) of the 64 patients not admitted. The mean spend on investigations in the MAU for patients with CP who were not admitted was Euro266 (versus inpatient Casemix mean cost per patient admitted with non-cardiac CP of Euro1,596). Admission was avoided in 87% of patients presenting with CP. Overall 30 day mortality and unplanned readmission rates were 0% and 3% (n = 2), respectively. Patient satisfaction with MAU assessment was high (n = 73; 99%).
Conclusions: Cardiovascular symptoms are the presenting complaint of half of patients assessed in a MAU. Uptake of cardiac investigations is high and priority access to cardiac investigations reduces admissions. MAUs can achieve cost efficient assessment of patients presenting with acute and subacute CP.

Session 9: Electrophysiology/General Cardiology

Oral Presentations

72. Cost and Resource Implications of Defibrillator Lead Fractures

[1,2]Groarke J, [2]Buckley U, [1]Collison D, [2]O'Neill, [2]Mahon N, [1]Foley B

[1]St. James's Hospital, Dublin; [2]Mater Misericordiae University Hospital, Dublin

Introduction: Implantable cardioverter defibrillator (ICD) lead failure occurs at annual rates ranging from 0.18 to 3.6%. With growing numbers of ICD recipients, management of lead-related complications is set to be an ongoing clinical challenge. The aim of this study is to describe the cost of managing patients with lead fractures.
Methods: Lead fractures were identified by chart review of all patients who had undergone lead extraction and/or replacement between 01/01/06 and 28/02/2011 in two tertiary referral hospitals. Details of lead fracture and replacement were recorded for each patient. Follow up data were sought. Data were used to microcost admissions.
Results: 24 patients [mean age (SD; range) = 54 (16; 16–80) years; male:female = 7:1] were identified with lead failure at a mean interval from time of implant of 2.9 years (1.9 years; 20 days–9 years). Lead fractures were identified as a result of inappropriate shock delivery in 16 (67%), routine device check in 5 (20%) and early detection software in 3 (13%). The mean number of inappropriate shocks delivered was 10 (3; 1–60). 23 (96%) patients underwent lead replacements. The mean length of stay in a monitored bed was 5.9 (8.6; 1–43) days. The fractured lead was successfully extracted by simple traction in 9 (38%) patients. 6 of 23 (26%) of patients received a new generator. Complications were recorded for 3 patients (12.5%). 2 (8%) patients were readmitted to hospital within 30 days with a device related complication. 30-day and 1-year mortality were 0% and 4%, respectively. Costs of bed days (Euro150,894), new generators (Euro82,500), catheterisation laboratory staffing (Euro13,499), ambulance transfers (Euro9,100), laboratory investigations (Euro1,723), other radiological and cardiac investigations (Euro1,981) yield an average cost of managing each patient with lead fracture of Euro10,800.
Conclusions: Management of defibrillator lead fractures is associated with significant cost and bed day consumption. With expanding indications for ICD implantation and a growing population of younger ICD recipients, the prevalence of lead fractures is likely to increase with cost and resource implications.

73. Riata Lead Failure: a Report from Northern Ireland (NI) Riata Lead Screening Programme

Kodoth V, Cromie N, McEneaney D, Wilson C, Lau E, Roberts MJ

Royal Victoria Hospital, Belfast

The St. Jude Medical Riata family of leads are high voltage implantable cardioverter defibrillator (ICD) leads. Insulation related inappropriate shocks were noted in a patient in November 2006 and sporadically since then. The objectives of the NI Riata lead screening programme were to identify insulation defects, risk factors, define prevalence, determine management plan and develop a follow up programme.
Method and Results: All patients with Riata lead in NI were screened with high resolution fluoroscopy and lead parameters checked. Out of 212 patients with Riata lead, 164 were males and 48 females. Mean age at the time of implantation was 62.7 ± 13.40 years. Lead model 1580 was implanted in 16 patients, 1582 in 69, 1570 in 8, 1572 in 5, 7000 in 60, 7002 in 41, 1571 in 2, 1742 in 2, 7040 in 6 and 7022 in 3 patients. One hundred and sixty-five out of 212 were screened as 28 were dead, 5 had the lead explanted prior screening, 3 excluded and 11 did not attend the screening programme. Mean screening period after implantation was 3.98 ± 1.43 years. After screening 25 (15%) were classified as positive, 3 (1.8%) borderline and 137 (83%) negative for insulation breach. Five (3%) out of the 25 presented with spontaneous lead issues and 20 (12%) were identified by fluoroscopy. Seven patients had the defective lead removed. The rest of the patients are closely monitored with 3 monthly fluoroscopy and ICD parameter check.

Conclusion: A significant proportion (15%) of patients had a insulation breach on screening. Twenty percent of the patients with insulation defect presented with clinically significant events. Insulation breach cannot be detected with Chest X-ray or by checking ICD parameters and requires high resolution fluoroscopic imaging. Further surveillance plans for negative and borderline category need to be developed and agreed internationally.

74. Atrial Fibrillation in Ireland. Highly Symptomatic and Associated with a High Incidence of Co-Morbidities: Insights from the RealiseAF Registry

O'Neill J, Keelan T, Galvin J, Conway M, Gumbrielle T, Sheahan R, McFadden E, Murphy R, McCaffrey D

On behalf of the RealiseAF Irish Investigators

Aims: Atrial Fibrillation (AF) is the most commonly encountered arrhythmia in contemporary clinical practice with heterogeneity in presentation, associated co-morbidities and symptoms. We sought to describe a cohort of Irish patients with AF, who participated in the RealiseAF registry.
Methods: RealiseAF is an international cross-sectional registry of patients with any history of AF in the previous 12 months performed in 26 countries on 4 continents from randomly selected samples of cardiologists and internists. Data were gathered between October 2009 and May 2010 in eight Irish centres.
Results: Of 229 patients enrolled in 8 Irish centres (67% male), mean age 68 + 12 years, 25% were in sinus rhythm, and 36% had controlled AF (heart rate <80 bpm at rest). The vast majority (87%) had at least one symptom referable to AF, with dyspnoea (40%), fatigue (37%) and chest pain (14%) the most common features. Most (90%) had structural heart disease and 10% had "lone AF". Alcohol (9%) and inter-current infection (8%) were the most commonly described precipitants. Co-morbidities were frequent with coronary artery disease (32%), valvular heart disease (19%) and stroke (9%) being among the most common. In keeping with the relatively high stroke incidence, 43% had a CHADS2 score >2. Almost 1/3 (32%) of patients enrolled had been hospitalised for cardiovascular morbidities in the preceding year.
Conclusions: AF remains a huge therapeutic challenge in Ireland, as in other developed market economies. Despite its prevalence, and its perceived benign course, many patients remain symptomatic with limiting symptoms.

75. Long Term Outcomes in Patients Receiving Cardiac Resynchronization Therapy: a 10-year Single Center Irish Registry

AlQaseer M, Jamshaid M, Collis R, Collins R, Wotchcorn R, Sheahan RG

Beaumont Hospital, Dublin

Background: To our knowledge, there are no registries in the Republic of Ireland that have followed up patients implanted with CRT, assessing improvement of symptoms, mechanical and electrical dyssynchrony, and mortality benefit. The aim of this registry is to characterize our patient population that are treated with CRT with view to quantifying the long-term effect of CRT on clinical status, improvement of echocardiographic parameters, and survival benefit.
Methods: This is a retrospective observational study that looked at consecutive patients that have been implanted with CRT in a single center in Dublin over the past 10 years. We registered their baseline demographics and assessed their indication for implantation. We then looked at their most current office visit to establish their most recent NYHA status, QRS duration, and their most recent EF. All mortalities were noted along with documentation of the cause of death and interval between time of death and the date of CRT implant.
Study Results: 202 CRTs were implanted between 2001 and 2011 in our center. Average age of our patient population was 71 years of age. 87% of the patients were male. 21 of the implanted devices were CRT-Ps and the rest were CRT-Ds. 69% of the patients had an underlying ischemic cardiomyopathy. Mean follow up was 5 years**.** With view to indications of CRT implantation: average Ejection Fraction at time of implant was 28.8% with a LV end systolic dimensions of 6.1 cm, the average QRS duration was 164.8 ms, the average NYHA classification at time of implant was 3.1. The ejection fraction rose to 34.6% on average after CRT therapy and the QRS duration was shortened to 131.2 ms. In terms of functional classification, the patients' NYHA status improved by an average of 1.2 classes. 71% of the patients were on Aspirin, 82% on beta-blocker therapy, 74% on ACE-inhibitor/ARB therapy, and 84% were on diuretics prior to implantation. This was similar to their treatment regimen post implantation. However, a trend was noted that the required diuretic dosages were reduced after implantation due to improvement in symptoms. Out of the 202 patients, 45 died (22%). 8 of those had their had devices implanted with 1 year of their mortality.
Conclusion: This is observational retrospective analysis of our center's experience in CRT implantation over the past 10 years. It shows trends in improvement in EF, NYHA status, and electrical dyssynchrony with this therapy in our patient population with mortality benefit and long term outcomes that are comparable to the international data.

76. Use of the Stand-Up Test for the Long QT Syndrome in a Screening Population for Inherited Cardiac Diseases

McGorrian C, Constant O, O'Donnell C, Keelan T, Galvin J, O'Neill J, Mahon N

The Heart House, Mater Misericordiae University Hospital, Dublin

Objectives: Detection of the long QT syndrome (LQTS) in screening populations can be clinically challenging, as QT prolongation can vary. The stand-up test for LQTS examines QT interval response to the tachycardia provoked by standing. We describe initial experience with this test in a high risk screening population.
Methods: Prospective, observational study. Patients who were relatives of SADS victims, or who had a possible personal or family history of LQTS, were offered stand-up testing if they had changes suspicious for LQTS on initial screening. Patients lay recumbent for 10 min, then stood up for 5 min, with continuous 12-lead ECG printout. The QT interval and preceding RR were measured at maximal bradycardia, maximal tachycardia, and maximal QT stretching (T wave approaching the next P wave). Using the suggested QT cut-offs (**Viskin et al. 2010), ECG, Holter measurements, and Schwartz score were compared by stand-up test findings.
Results: Stand up tests were available on 30/35 patients. Only seven patients (23.3%) had QTc $\geq$450 ms (in males) or $\geq$470 (in females) on their screening ECG. In total, 17 persons (56.7%) had a QTc at maximal tachycardia or stretch which reached Viskin criteria ("positive stand up"), 10 of whom had normal range baseline ECG QTc. Persons with a positive stand-up test had longer screening ECG QTc (mean 440.81, SD 38.82 vs. 411.54, SD 26.53, $p = 0.03$), and

longer mean QT on Holter (mean 461.18, SD 27.30 vs. 435.36, SD 18.92, $p = 0.02$). A positive stand-up test was associated with a 100.0% (95% CI 39.7, 100.0%) sensitivity and 50.0% (95% CI 29.9, 70.1%) specificity for a Schwartz score of ≥ 3 (AUROC 0.75).
Conclusions: The stand-up test identifies persons with higher LQTS risk and may prove useful in persons with non-diagnostic ECG findings. Further genetic mutation analysis will enhance understanding of the diagnostic capabilities of this test.

77. Out of Hospital Cardiac Arrest: a Review of Ambulance Data in Dublin Mid-Leinster

[1]Burke J, [2]Kelleher C

[1]UCD School of Nursing Midwifery and Health Systems, Dublin
[2]UCD School of Public Health, Physiotherapy and Population Science, Dublin

Introduction: Ireland, at last, has an out of hospital cardiac arrest (OHCA) register. Previously there was no system of recording in cardiac arrest management in Ireland and very few published studies.
Objective: To review existing ambulance data to generate information on the demographics of those who suffer these emergencies, circumstances of their collapse, emergency medical system response and on outcomes.
Design: A retrospective review of 32, 124 ambulance patient-care report forms (PRFS) filed for the year 2008. Data were extracted on those who had suffered a collapse or cardiac and/or respiratory emergency. Variables for the subgroup of cardiac arrests cases ($n = 250$) were recorded according to Utstein criteria and in concordance with the then budding OHCA register. For data protection reasons, this study's outcome was status at transfer to hospital care.
Setting: The operational area for the Region's ambulance division, an area of 46,380 km^2, population 1,499,705 (Central Statistics Office 2006).
Results: Overall, 11% of the 32,124 PRFs were classified as collapse, 9% as chest pain and/or other cardiac. Approximately 1% ($n = 250$) were classified as cardiac arrest. Of the 214 non traumatic cardiac-arrest cases, 64% were male, mean age 66 years. Fourteen percent had spontaneous circulation on arrival at hospital. Almost two-thirds, (64.5%) occurred in the home while <18% occurred in a public place. Initial analysis with Chi-square test for independence indicates a significant association between outcome and cardiac arrest rhythm, urban/rural location and whether the arrest was witnessed or not.
Conclusion: It would appear that responding to cardiorespiratory emergencies accounted for 10.5% of the Region's EMS workload. This study provides valuable information for pre-hospital care planning particularly in light of recent directives from the Irish Health Information and Quality Authority in relation to response time indicators for pre-hospital emergency care.